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SCIENCE FICTION CLASSICS

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ICD

HUGO GERNSBACK

The Magnetic Storm

HARL VINCENT

Thia of the Drylands

CAPT. S. P. MEEK USA

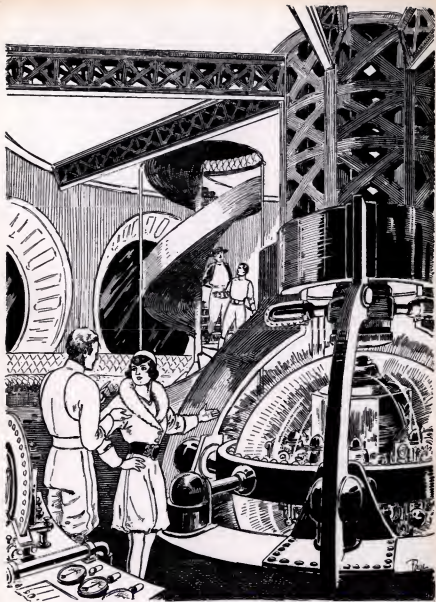
The Murgatroyd Experiment

One of His
Outstanding
Novelets

**MURRAY
LEINSTER**

POLITICS





THE SKYLARK OF SPACE Illustrated by FRANK R. PAUL (Amazing-1928)

SCIENCE FICTION CLASSICS

No. 1

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Cover by LEO MOREY
"THIA OF THE DRYLANDS"

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SCIENCE FICTION CLASSICS, is published quarterly by Magazine Productions, 69-62 230 Street, Bayside Long Island, N.Y. at 50¢ a copy. Subscription rates: One Year (4 issues) U.S. and possessions: \$1.65; Canada and Pan American Union Countries \$2.00; all other countries \$2.50. Copyright 1967 by Magazine Productions, Copyright 1926, 1928 by E.P. Co. Inc., Copyright 1931, 1932 by Teck Pub. Co. All rights reserved.

INTRODUCTION

In its own unique way each of the six pieces chosen for the first issue of *Science Fiction Classics* has that almost indefinable something which makes a story timeless.

For instance, "The Magnetic Storm" by Hugo Gernsback was selected because it is unquestionably a showpiece in which the originator of the term combined all of the elements needed for a piece of "scientifiction." When "Storm" was written, science came first, narrative second. However, though fashions have changed, it still has that special charm and sense of wonder so often missing in today's world of mass-produced "sophistication."

In "Politics" Murray Leinster bridges the gap between generations partly because his subject—the military vs. the domestic political establishment—is a particularly timely one. Yet there's more involved than that, not the least of which is Leinster's storytelling ability, a talent which makes this—one of his earlier efforts—the unmistakable work of a master whom many consider the "dean of science fiction."

Raymond Gallun's "Lunar Chrysalis" is a space adventure, selected because now that we've had a few "mechanized" looks at the moon's surface it's becoming more and more apparent it will take *men* and not simple "robot" probes to unearth whatever mysteries lie beneath this seemingly empty "wasteland."

The cover story, Harl Vincent's "Thia of the Drylands," was chosen because it's the kind of unabashed space opera which "hooked" many an early reader on science fiction. A beautiful girl, plots and counter-plots, chases and escapes—these are the ingredients which make "Thia" fun reading—and a greater compliment can't be paid any kind of writing.

"The Eggs from Lake Tanganyika" by Curt Siodmak was picked because it's one of those "ever-alive" stories which science fiction buffs never seem to forget. This tale of giant tse-tse flies and the trials of Professor Maier-Meyer, we are convinced, is a one of a kind *romp* so conceived and executed the author's love for the idiom shines through with a deathless aura.

The last piece, Capt. S. P. Meek's "Murgatroyd Experiment," is a chillingly prophetic "quasi-historical" timetable containing elements more frightening today than when it first appeared. And if Meek's guesses about our future prove as accurate as some of those about our near past and present we may well need to shudder at what could lie ahead.

Finally, to top off the issue, there are portfolios of Frank R. Paul's illustrations of some of Jules Verne's classics and E. E. Smith's "Skylark of Space." These illustrations are included simply because they seem to belong in this first issue of *Science Fiction Classics*.

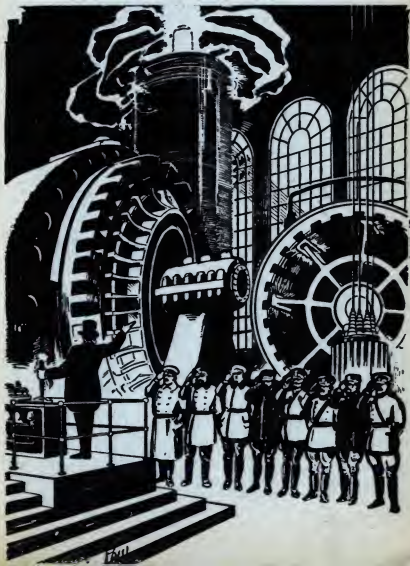
That's it then, each story chosen for a special something all its own, each still first-rate entertainment, and each complete with the original artwork.

We hope you like them, and welcome any suggestions you may have for other off-the-beaten-track classics you'd like to see in future issues.—R.A.

THE MAGNETIC STORM

HUGO GERNSBACK

Illustrated by FRANK R. PAUL



This story was written during the world war, long before the death ray was ever "invented."

It is believed in some quarters that here we have the original germ of the death ray. In fact, the means chosen by the author to bring down enemy airplanes by means of electricity were exploited a number of years later by Grindell Matthews, although he admits today that the death ray was pure fiction. Nevertheless at some future date it will be possible to do just what the author tells us in this story.

*Nikola Tesla, who read the original proofs of this story, endorses the idea. He himself was able to burn out electrical amateurs thirteen miles from his famous Colorado power plant, in 1892, when he was also able to light electric lamps at this distance, without wires.**

**This is the original blurb used when "Storm" was first published.—Ed.*

WHY" Sparks had stopped reading the New York *Evening World*: He contemplated his old meerschaum pipe meditatively while with his long and lanky index finger, stained by many acids, he carefully rubbed a long, thin and quivering nose. This was always a sign of deep, concentrated thought of the nose's owner. It also, as a rule, induced the birth of a great idea.

Again, and very slowly he re-read the article, which millions that same day had read casually, without a quiver, let alone, a nose quiver. The newspaper item was simple enough:

NEW YORK, Aug. 10, 1917.

—An electromagnetic storm of great violence swept over the eastern section of the United States last night. Due to a brilliant Aurora Borealis,—the Northern Lights,—telegraph and long distance telephone, as well as cable communications were interrupted for hours. No telegraphic traffic was possible between New York and points West. It was impossible to work any of the transatlantic cables between 12:15 A. M. and 9:15 A. M., every one of them hav-

ing "gone dead." The Aurora Borealis disturbance affected all telegraph and telephone lines extending between Chicago and the eastern cities. On telegraph wires of the Postal Telegraph Co. without regular battery being applied at terminal offices, grounded lines showed a potential of 425 volts positive, varying to 225 volts negative; the disturbance continuing between 12:15 A.M. and 9:15 A.M.

At Newark, N. J., in the Broad Street office a Western Union operator was severely shocked, trying to operate the key, while long sparks played about his instruments.

Sparks rose excitedly and began pacing the cement floor of the vast Tesla laboratory, totally oblivious to the fact that he was sucking a cold pipe. The more he paced about, the more excited he became. Finally he flung himself into a chair and began feverishly to make sketches on big white sheets of drawing paper. "Why" Sparks had been just an ordinary "Bug," an experimenter, when he entered Tesla's great research laboratory at the beginning of

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the great war in 1914. Tesla liked the keen, red-haired tousled boy, who always seemed to divine your thoughts before you had uttered five words. His clear blue eyes, lying deep in their sockets, sparkled with life and intelligence and what Sparks did not know about electricity was mighty little indeed. I believe there is no electrical book in existence that Sparks had not devoured ravenously in his spare hours, while having lunch or else while in bed, in the small hours of the morning. His thirst for electrical knowledge was unbounded, and he soaked up every bit of information like a sponge. Yes, and he retained it, too. In short, the young prodigy was a living electrical cyclopedia and highly valued by his associates. No wonder Tesla in three short years had made him superintendent of the laboratory.

Sparks' First Name

Of course, Sparks' first name was not really "Why." But some one had dubbed him with this sobriquet because of his eternal "But *why* is this,"—"Why, why should we not do it this way?"—"Why do you try to do that?" In short his first word always seemed to be "Why,"—it had to be, in his unending quest of knowledge. And his "Why" was always very emphatic, explosive-like, imperative, from which there was no escape.

Ah, yes, his first name. To tell the honest truth, I don't know it. Last year in the spring when I went up to the laboratory, I thought I would find out. So when I finally located the young wonder, behind a bus bar, where he was drawing fat, blue sparks by means of a screwdriver, I told him that I intended to write something about him and his wonderful electrical knowl-

edge. Would he be good enough to give me his *real* first name?

He was watching a big fuse critically, and in an absent-minded manner exploded: "*Why?*" That finished my mission. And for all I know his real name is "Why" Sparks.

But we left Sparks with his drawings, in the laboratory. That was on a certain evening in 1917. To be exact it was about 10 o'clock. At 10:05 Tesla accompanied by two high army officials strolled into the laboratory where Sparks was still feverishly engaged with sketches lying all about him.

Tesla who was working out a certain apparatus for the Government had dropped in late to show Major General McQuire the result of six weeks' labors. The apparatus had been completed that day and the General, a military electrical expert, had come over specially from Washington to see the "thing" work.

But before Tesla had a chance to throw in the switch of the large rotary converter, Sparks had leaped up, and was waving excitedly a large drawing in Tesla's face. He gushed forth a torrent of sentences, and for fully five minutes Tesla and the two Army officials were listening spell-bound to the young inventor. For a minute or two the three men were speechless, looking awe-struck at Sparks, who, having delivered himself of his latest outburst, now became normal again and lit up his still cold pipe.

It was Tesla who first found his voice. "Wonderful, wonderful. Absolutely wonderful, Sparks. In a month you will be the most talked of man on this planet. And his idea *is* sound." This to the General. "Absolutely without a flaw. And so simple. Why, oh why! did I not think of it before?"

Come, let me shake the hand of America's youngest and greatest genius!" Which he did.

There then followed an excited thirty-minute conversation with the two army men and an endless long distance talk with the War Department at Washington. Then there was a rush trip to Washington by Tesla and Sparks, conferences at the War Department, and finally a few days later Sparks went to the White House and was presented to the President, who was highly enthusiastic about the model which Sparks and Tesla demonstrated to the head of the Nation. Still later there were certain rush orders from the War Department to the General Electric and Westinghouse Companies for many big, queer machines, and these same machines were shortly . . . But here the Censor bids us an emphatic "Halt." One may not even now divulge certain military information. You appreciate that.

Behind the German Lines

Baron von Unterrichter's flying "Circus" was getting ready to bomb a certain American depot behind the lines. The Americans of late had shot down entirely too many of the Baron's flyers. Only yesterday von der Halberstadt—a German ace himself—and one of von Unterrichter's closest friends had been downed, and killed inside of the German lines. So the Baron was out for blood this sunny morning. As he put it:

"*Verdammte Yankee Schweinehunde,** we will show them who is master of the air hereabouts," shaking his fist at the American lines beyond.

"*Sie Muller,*" this to an orderly.

"*Zu Befehl, Herr Leutnant,*" replied the young orderly as he came on the run and stood at attention, clicking his heels together, hand at his cap.

"*Versammlung, sofort,*" barked the chief, as he hastened Muller off to summon post haste every man of the aerial squadron for the usual conference before the attack.

In less than ten minutes the thirty flyers were standing drawn up at military attention before their chief, forming a half circle about him. Von Unterrichter's instructions were simple enough. This was a reprisal raid; von der Halberstadt's death must be avenged, fearfully avenged. No quarter was to be given.

"*Dieses Amerikanische Gesindel!*"—here his voice rose to a shrill pitch, "must be taught to respect us, as never before. The orders are to bomb every American base hospital within the sector . . ."

At this several of the men recoiled involuntarily, which did not escape the keen eye of von Unterrichter, who now incensed to blind fury, by this show of "softheartedness," as he put it, exhorted his men in his harshest possible terms. "And as for their flyers, you must not give quarter. You must not be satisfied with disabling their machines. Kill them! *Schiesst die Lumpen zusammen!* Pump nickel into them, if you see that they may land unharmed"—this in direct violation of all flying etiquette—a thing abhorred by any decent flyer as a rule. It is bad enough to have your machine shot down, but "sitting on a disabled enemy's tail," and pouring machine gun fire into a helpless man, struggling in mid-air,—what was German prestige coming to with such methods. Plainly the men did not like such liberties with

*For translation of foreign terms see end of this story.

their honor, but orders were orders. They grumbled audibly and cast not very encouraging looks at their chief. Even his parting shout: "*Vorwärts—für Gott und Vaterland*," failed to bring the usual cheers.

The German Aerial "Circus"

Promptly on the minute of 10 the fifteen flyers of the "Circus" rose, like a flock of big white sea gulls heading in "V" formation towards the American lines. Von Unterrichter was leading his herd in a big *Fokker*. He was out for blood and he meant to have it. His face was set, his jaws clenched like a vice. Hate was written in large characters over his face . . . Why didn't these *Dollarjager* stay home and mind their own business chasing their dollars? What right did they have in this fray, anyway. "*Elendige Schweinebande*," he spoke out loud, to better vent his overpowering hate.

But where were the Yankee *Flieger* today? The Baron's "Circus" was up one thousand meters and less than a mile away from the American first line trenches, but still no machine in sight, either American or French. Strange. Quite an unheard of occurrence. Afraid? "*Unsinn*," he muttered to himself, they were not the sort to be afraid. Von Unterrichter knew that. For the first time he felt a vague sort of uneasiness creeping over him. He could not understand. There was not a *Flieger* anywhere in sight. None on the ground either, as he scanned the vast saucer below him through his *Zeiss*. Was it a new trick, was . . .

Before he finished his train of thought, his engine stopped dead. Cursing volubly he made ready to "bank" his machine in order to vol-plane down behind his own lines. He

congratulated himself that his engines had not stopped later while over the enemy's lines, but his pleasure was short-lived. For he suddenly became aware of the fact that there was a supreme quiet reigning all about him. Why did he not hear the loud roar of the other fourteen engines, now that his own engine was quiet? Looking around he perceived with horror that every one of the fourteen machines of the "Circus" had simultaneously "gone dead" and *all of them were now volplaning earthward*.

The "Circus" Descends Disabled

Sick with an unknown terror, von Unterrichter made a clumsy landing in the midst of his other flyers, all of them pale, some shaking, some with a strange animal expression in their eyes. *What unknown, invisible hand had with one stroke disabled the fifteen engines, one thousand meters above the ground?*

"*Himmelkreuzdonnerwetter*," shrieked von Unterrichter jumping to the ground near his airdrome. "I . . . I . . . cannot" . . . here his voice broke. For the first time in his life the young Prussian was speechless. He then stamped his foot in a frenzied fury, but finally gave vent to a full round of cursing. At last he collected his senses sufficiently to look for the cause of the mysterious occurrence. It only took five minutes to find it. His mechanic pointed to the magneto.

"*Kaput*," he said laconically, if not grammatically.

"*Auseinander nekmen*," commanded the chief. It took the deft mechanic but a minute to take the magneto apart, and to withdraw the armature. He gave it one look and with a sickly smile uttered:

"*Ausgebrannt, Herr Leutnant*."

Herr Leutnant took the armature into his own hands and inspected it critically. Sure enough it was burnt out, if ever there was a burnt out armature. Perhaps fused would be a better term. The armature was beyond repair, a child could see that. He flung it away and went over to the next nearest flyer. But the mechanic had already located the trouble—in the magneto. Burnt out, too!

Von Unterrichter unutterably sick at heart, aimlessly wandered about the other machines. In each case the result was the same: *Every magneto armature of the fifteen flyers was burnt out*, the wires fused together, all insulation gone!

"Aber so 'was,'" muttered von Unterrichter, looking about him helplessly. It took fully five minutes before it filtered through his thick skull that this disaster that overtook his "circus" could by no means be a coincidence.

"Verfluchte Amerikaner," he said, "probably a new Teufelmaschine of Edison!"

But what would the *Kommando* say to this? Instantly he stiffened as he jumped into a waiting automobile, attached to the airdrome.

"Zum Kommando, schnell," he ordered the driver as he sank back into his seat. He must report this queer business to headquarters at once. The driver cranked the engine, then cranked it some more Pfut . . . pfut . . . pfut . . . sputtered the engine asthmatic-like, but it did not start. He tried again. Same result.

The Useless Automobile

"Donnerwetter nochmal," stormed the Baron vexed over the delay, "was ist denn jetzt los? why in thunder don't you start you miserable dog? But the

engine would not start. The perplexed chauffeur climbed into the seat of the old style car, which still had its faithful spark coils, so necessary to the ignition system. But the spark coil refused to work, although the storage battery was fully charged and all the connections were right. Cautiously he pulled out one of the spark coil units from its box. One look told the story.

"Ausgebrannt, Herr Leutnant," he said weakly, for he had seen the burnt out magneto armatures a few minutes before.

Von Unterrichter, with eyes almost popping out of his head, was struck absolutely speechless for half a minute. "Heiliger Strohsack," he muttered awe-struck, remembering his young sister's favorite expression, whenever something out of the ordinary happened to her. He finally collected himself sufficiently and jumped out of the car.

"Zum Telefon," he muttered to himself. He must report this uncanny occurrence at once to the *Kommando*. Not a second was to be lost. He at last understood that something momentous had happened. He made the airdrome on the run and though it was only 200 yards away he surprised himself at the speed he made. Puffing volubly he arrived at the telephone. He gave the handle several quick turns, grasped the receiver and simultaneously bellowed into the mouthpiece in front of him:

"Hallo, hallo" . . . but he went no further. The receiver flew from his ear, for there had been a loud clattering, rattling, ear-splitting noise in the instrument that almost burst his eardrum. He made a foolish grimace, as he held his ear with his hand. Cautiously he approached the receiver

to within a few inches of his other ear and listened. All was quiet, not a sound. Mechanically he unscrewed the receiver cap and looked at the two bobbins. *They were charred and black.* The telephone was dead.

To the Radio Transmitting Station

The instrument slipped from his hand and dangling by its red and purple cord went crashing against the wall of the airdrome, while von Unterrichter limply sank into a chair.

Once more he got up and walked out. He must get in touch with his General at all costs. This was becoming too serious. Ah . . . he had it, the field telegraph. There was one at the other end of the building. He went there as fast as his legs could carry him. He opened the door of the little office, but one look sufficed. The young man in charge of the telegraph sat dejected in a corner, a dumb expression in his eyes. Long purple sparks were playing about the instruments on the table. A child could have seen that it was impossible to either send or receive a telegram under such conditions. . . . Ah! an inspiration . . .

"*Dummkopf*," he muttered to himself, "Why didn't I think of it before. *Die Funkenstation!* Surely the wireless must work! Ha, ha, there are no wires there at least to burn out!"

The radio station was over a kilometer away. He knew it well, for he had flown over it a great many times. To get there quick, that was the question. The *Kommando* was at least eight kilometers to the rear, and he knew he could not make that distance on foot very quickly. Ah, yes, there was a horse somewhere around. The cavalry horse was located soon, and as the

young airman walked hurriedly about, troubled as he was, he could not help noticing the listless attitude of every man he passed. Men were whispering in a hushed manner, alarm was plainly written on their faces—the fear of the unknown.

Von Unterrichter jumped on to his horse and galloped in the direction of the field radio station. It did not take him long to reach it, and long before he dismounted he could see the bright blue spark of the transmitting station.

"*Gott sei Lob*," he uttered to himself as he jumped to the ground, "at least that's working."

Now it so happened that von Unterrichter had been an expert wireless man before the war, and while he did not know a great deal about electricity, he well knew how to send and receive messages.

He ran to the wagon which carried the mobile radio field apparatus and peremptorily ordered the operator in charge away. "*Aber Herr Leutnant*," expostulated the thus rudely interrupted man, "I tell you . . ."

"*Maul halten*," thundered von Unterrichter, with which he sat down, clamping the operator's receivers on his head.

At the Wireless Key

He pressed the key impulsively, and noted with grim satisfaction that the loud blue spark crashed merrily in the not very up-to-date spark gap.

As he sent out the call mechanically, he wondered vaguely what the matter could be with the government, because it did not even supply a modern, up-to-date *Loschfunkenstrecke*—quenched spark gap—for field use. Things must be pretty bad when the government must economize even a few beggarly

pounds of brass, so necessary for a noiseless spark gap.

But he could not give the matter further attention for he had thrown the aerial switch from "sending" to "receiving."

He had strained his ears for a reply from the operator from the *Kommando*, but, as the switch was thrown, instead of a reply there was a loud, constant roar in the receivers, so loud that it was painful. Off came the headgear, while von Unterrichter once more sank into a chair.

He was a pitiful spectacle to look at, the fate of a 20th Century man flung back a hundred years. His eyes roamed idly about till the distant railroad embankment struck his eye. No train was moving. Everything was at a standstill—how could a train move without a telegraph? How could a train be dispatched—there would be a thousand collisions. He turned to the radio operator, who as yet had not grasped the situation in its entirety.

"*Nordlicht, nicht wahr, Herr Leutnant?*" he began, thinking no doubt that the phenomenon was an ordinary form of *Aurora Borealis*,—the northern lights,—in other words, a magnetic storm, that would be over soon.

"*Dummes Rindsvieh*" . . . snapped the *Herr Leutnant*, who knew better by this time. Indeed he was to know still more at once, for while he was speaking there came to his ear a low dull roar, a sound he had heard once before, far back in 1914 when the Germans had retreated very much in a hurry beyond the Marne.

Panic seized him. Yes the sound was unmistakable. The German army once more was in full retreat—no it was a rout—a panic-stricken rabble that made its way back.

Rumors Spread Through the German Ranks

Like lightning the news had spread among the men at the front that uncanny things were afoot, that all communications had been annihilated with one stroke, that no orders could be sent or received except by prehistoric couriers, that the *Grosses Kommando* was cut off from the army, and that in short the German army as far as communication was concerned, had suddenly found itself a century back.

For what had happened to von Unterrichter that morning, had happened on a large scale not only to every one along the front, *but all over Germany as well!* Every train, every trolley car, every electric motor or dynamo, every telephone, every telegraph had been put out of commission. With one stroke Germany had been flung back into the days of Napoleon. Every modern industry, every means of traffic—except horse-drawn vehicles—were at a standstill. For days the German retirement went on, till on the fifteenth day, the entire German army had retired behind the natural defenses of the Rhine, the victorious Allies, pressing the fleeing hordes back irresistibly.

And it must have been a bitter pill for the German high-command to swallow when they saw that the Allied fliers were constantly flying behind their own lines and that as the Allies advanced, *their* automobiles and *their* trains seemed to run as well as ever *behind* their own lines. But no German succeeded in flying an aeroplane or in running an automobile. That mysterious force obviously was trained only against them, but was harmless behind the Allied lines. Nor did the Germans find out to this date what caused their undoing.

I cannot, even now, divulge the full details of the scheme of just how the Germans were finally driven across the Rhine. That, of course, is a military secret.

But I am permitted to give an outline of just what happened on that memorable morning, when the German army was flung back into the dark ages.

In Tesla's Laboratory

But first we must go back to Tesla's laboratory once more, back to that evening when "Why" Sparks first overwhelmed Tesla and his companions with his idea. This is in part what Sparks said:

"Mr. Tesla! In 1898 while you were making your now historic high-frequency experiments in Colorado with your 300-kilowatt generator, you obtained sparks 100 feet in length. The noise of these sparks was like a roaring Niagara, and these spark discharges were the largest and most wonderful produced by man down to this very day. The Primary coil of your oscillator measured 51 feet in diameter, while you used 1100 amperes. The voltage probably was over 20 million. Now then, in your book, *High Frequency Currents*, among other things you state that the current which you produced by means of this mammoth electric oscillator was so terrific that its effect was felt 13 miles away. Although there were no wires between your laboratory and the Colorado Electric Light & Power Co., five miles distant, your 'Wireless' Energy burnt out several armatures of the large dynamo generators, simply by long distance induction from your high frequency oscillator. You subsequently raised such havoc with the Lighting

Company's dynamos that you had to modify your experiments, although you were over five miles away from the Lighting Company.*

"Now if in 1898, twenty years ago, you could do that, why, WHY cannot we go a step further in 1918, when we have at our command vastly more powerful generators and better machinery. If you can burn out dynamo armatures 13 miles distant with a paltry 300 kilowatts, why cannot we burn out every armature within a radius of 500 miles or more?

Sparks' Great Project

"The primary coil of your oscillator in 1898 was 51 feet in diameter. Why cannot we build a primary 'coil' from the English channel down to Switzerland, paralleling the entire Western front? This is not such a foolish, nor such a big undertaking as you might think. My calculations show that if we were to string highly insulated copper wires one-quarter inch thick on telegraph poles behind the front, the problem would become a simple one.

Ordinary telegraph poles can be used, and each pole is to carry twenty wires. Beginning three feet above the ground, each wire is spaced two feet distant from the next one. These wires run continuously from the sea to Switzerland. Moreover, every ten miles or so we place a huge 3,000 kilowatt generating plant with its necessary spark gaps, condensers, etc. The feed wires from these generating plants then run into the thick wires, strung along the telegraph poles, forming the gigantic Tesla Primary Coil. Of course, you

*The above occurrences as well as the cited experiments and effects of the Tesla currents are actual facts checked by Mr. Tesla himself, who saw the original proof of the story.—Editor.

realize that in a scheme of this kind it is not necessary to run the telegraph poles actually parallel with every curve of the actual front. That would be a waste of material. But we will build our line along a huge flat curve which will sometimes come to within one-half mile of the front, and sometimes it will be as much as fifteen miles behind it. The total length of the line I estimated to be about 400 miles. That gives us 40 generating plants or a total power of 120,000 kilowatts! A similar line is built along the Italian front, which is roughly one hundred miles long at present. That gives us another 30,000 kilowatts, bringing the total up to 150,000! Now the important part is to project the resultant force from this huge Tesla primary coil *in one direction only*, namely that facing the enemy. This I find can be readily accomplished by screening the wires on the telegraph poles at the side facing our way as well as by using certain impedance coils. The screen is nothing else but ordinary thin wire netting fastened on a support wire between the telegraph poles. This screen will then act as a sort of electric reflector. So." . . . Sparks demonstrated by means of one of his sketches.

"Everything completed we turn on the high-frequency current into our line from the sea to little Switzerland. Immediately we shoot billions of volts over Germany and Austria, penetrating every corner of the Central empire. *Every closed coil of wire throughout Germany and Austria, be it a dynamo armature, or a telephone receiver coil, will be burnt out, due to the terrific electromotive force set up inductively to our primary current.* In other words every piece of electrical apparatus or machinery *will become the*

secondary of our Tesla coil, no matter where located. Moreover the current is to be turned on in the day time only. It is switched off during the night. The night is made use of to advance the telegraph poles over the recaptured land,—new ones can be used with their huge primary coil wires, for I anticipate that the enemy *must* fall back. Turning off the power does not work to our disadvantage, for it is unreasonable to suppose that the Teutons will be able to wind and install new coils and armatures to replace all the millions that were burnt out during the day. Such a thing is impossible. Besides, once we get the Germans moving, it ought to be a simple matter to follow up our advantage, for you must not forget that we will destroy ALL their electrical communications with one stroke. No aeroplane, no automobile, will move throughout the Central States. In other words, we will create a titanic artificial *Magnetic Storm* such as the world has never seen. But its effect will be vastly greater and more disastrous than any natural magnetic storm that ever visited this earth. Nor can the Germans safeguard themselves against this electric storm any more than our telegraph companies can when a real magnetic storm sweeps over the earth. Also, every German telegraph or telegraph line in occupied France and Belgium will be our ally! These insulated metallic lines actually help us to "guide" our energy into the very heart of the enemy's countries. The more lines, the better for us, because all lines act as feed wires for our high frequency electrical torrents . . ."

At Nomeny Near the Frontier

A few kilometers north of Nancy, in

the Department of Meurthe et Moselle, there is a little town by the name of Nomeny. It is a progressive, thrifty little French town of chief importance principally for the reason that here for four years during the great war the French army has been nearer to the German frontier than at any other point, with the exception of that small portion of Alsace actually in the hands of the French.

Nomeny in the military sense is in the Toul Sector, which sector early in 1918 was taken over by the Americans. If you happened to go up in a captive balloon near Nomeny you could see the spires of the Metz Cathedral and the great German fortress, but 16 Kilometers away, always presuming that the air was clear and you had a good glass.

On a superb warm summer morning there were queer doings at a certain point in the outskirts of Nomeny. All of a sudden this point seemed to have become the center of interest of the entire French, British and American armies. Since dawn the military autos of numerous high Allied officers had been arriving while the gray-blue uniforms of the French officers were forever mixing with the business-like khaki of the British and Americans.

The visitors first gave their attention to the camouflaged, odd-looking telegraph poles which resembled huge harps, with the difference that the wires were running horizontally, the "telegraph" line stretching from one end of the horizon to the other. A few hundred yards back of this line there was an old brewery from which ran twenty thick wires, connecting the brewery with the telegraph poles. To this brewery the high officers next strolled. An inspection here revealed a ponder-

ous 3,000 kilowatt generator purring almost silently. On its shining brass plate was the legend: "Made in U.S. A." There was also a huge wheel with large queer round zinc pieces. Attached to the axis of this wheel was a big electric motor, but it was not running now. There were also dozens of huge glass jars on wooden racks lined against the wall. Ponderous copper cables connected the jars with the huge wheel.

One of the French officers, who, previous to the war, had been an enthusiastic Wireless Amateur, was much interested in the huge wheel and the large glass bottles. "Aha", said he, turning to his questioning American confrere, "*L' eclateur rotatif et les bouteilles de Leyde.*"

There was little satisfaction in this, but just then a red-haired, tousled young man who seemed to be much at home in the brewery, came over and adjusted something on the huge wheel.

"What do you call all of these do-funnies?" our young officer asked of him, pointing at the mysterious objects.

"Rotary spark gap and Leyden jars," was the laconic reply. The officer nodded. Just then there was a big commotion. The door flew open and a French officer standing at attention shouted impressively:

"Le President de la Republique!"

The President of France Arrives

Instantly every man stood erect at attention, hand at the cap. A few seconds later and President Poincare walked in slowly, at his side General Petain. It was then five minutes to 10.

President Poincare was introduced to the red-haired, tousled young man whom he addressed as *Monsieur Sparks*. *Monsieur Sparks* speaking a much dilapidated French, managed,

however, to explain to his *Excellence* all of the important machinery, thanks to a sleepless night with a French dictionary.

Monsieur Poincare was much impressed and visibly moved, when a French officer had gone over Sparks' ground, and re-explained the finer details.

The President now takes his stand on an elevated platform near a huge switch which has an ebonite handle about a foot long. He then addresses the distinguished assembly with a short speech, all the while watching a dapper young French officer standing near him, chronometer in hand.

Somewhere a clock begins striking the hour of ten. The President still speaks but finishes a few seconds later. The distinguished assemblage applauds and cheers vociferously, only to be stopped by the dapper young officer who slowly raises his right hand, his eyes glued to the chronometer. Immediate silence prevails, only interrupted by the soft purring of the huge generator. The dapper young officer suddenly sings out:

"*Monsieur le President! A-ten-tion! AILEZ!"*

The President of the glorious French Republic then shouts dramatically: "*Messieurs . . . le jour de gloire est arrive . . . VIVE—LA—FRANCE!!*"—and throws in the huge switch with its long ebonite handle.

Instantly the ponderous rotary spark gap begins to revolve with a dizzying speed, while blinding blue-white sparks crash all along the inside circumference with a noise like a hundred cannons set off all at once. The large brewery hall intensifies the earsplitting racket so much that every one is compelled to close his ears with his hands.

Quickly stepping outside the party arrives just in time to see fifteen German airplanes volplaning down and disappearing behind the German lines. A French aerial officer who had observed the German airplanes, drops his glass, steps over to the President, salutes smartly and says impressively:

"*'Le 'cirque' du Baron d'Unterrichter Ils sont hors de combat!'*"

Hors de combat is correct. Von Unterrichter was not to fly again for many a week.

We look around to tell the glad news to General Petain, but the latter has disappeared into a low brick building where he now sits surrounded by his staff, poring over military maps ornamented with many vari-colored pencil marks, as well as little brightly-colored pin-flags. Telephone and telegraph instruments are all about the room.

The Enemy in Retreat

Again the President shakes hands with *Monsieur Sparks*, congratulating him on his achievement. Luncheon is then served in the former office of the brewery, gayly bedecked with the Allied flags along the walls. But even here, far from the titanic rotary spark gap, its crashing sparks are audible. Looking through the window we see a wonderful sight. Although it is broad daylight, the entire queer telegraph line is entirely enveloped in a huge violet spray of electric sparks. It is as if "heat lightning" were playing continuously about the whole line. No one may venture within fifty feet of the line. It would mean instant death by this man-made lightning.

Luncheon is soon over and more speeches are made. Suddenly the door flings open and General Petain steps

in. One look at his remarkable features, and all talk stops as if by magic. He crosses the room towards the President, salutes and says in a calm voice, though his eyes betray his deep emotion:

"Monsieur le President, toute l'armee Allemande est en retraite!!"

And so it was. The greatest and final retreat of the Kaiser's "invincible" hordes was in full swing towards the Rhine.

More congratulations are to be offered to Sparks. A medal . . . Heavens, where is that young man? But Sparks has slipped over to his machines and is standing in front of the noisy "thunder and lightning" wheel eyeing it enthusiastically.

"Why, oh WHY, do they call you *eclateur!*" he says. "Spark Gap is good enough for me!" "Oh, boy!! But you aren't doing a thing to those *Germins!*"

Translation of German and French Terms Used in This Story

GERMAN

Verdammte Yankee Schweinehunde: Damned Yankee Pig-Dogs!

Sie, Muller: You, Muller!

Su Befehl, Herr Leutnant: At your orders, Lieutenant!

Versammlung, sofort: Assembly, at once!

Dieses Amerikanische Gesindel: This American rabble!

Schießt die Lumpen zusammen: Shoot the rag-muffins together!

Vorwärts für Gott und Vaterland: Onward, for God and Fatherland!

Dollarjäger: Dollar Chasers.

Elendige Schweinebande: Miserable band of pigs. *Unsinn:* Nonsense.

Flieger: Flyer (aeroplane).

Himmelkreuzdonnerwetter: A popular German "cuss" word. Literally it means "sky-cross-thunder." English equivalent is "A thousand thunders."

Kaput: German slang, equivalent to our slang "busted."

Auseinander nehmen: Take it apart!

Ausgebrannt: Burnt-out.

Aber so was: Such a thing (of all things).

Verfluchte Amerikaner: Cursed Americans.

Teufelmaschine: Diabolic machine.

Zum Kommando, schnell: Quick, to Headquarters!

Donnerwetter nochmal: By all thunders!

Was ist denn jetzt los? What's up now?

Heiliger Strohstuck: Holy bag-of-straw; equivalent to "Holy Gee."

Dummkopf: Blockhead.

Die Funkenstation: The Radio Station.

Gott sei Lob: God be thanked.

Aber, Herr Leutnant: But, Lieutenant!

Maul halten: Shut up.

Loschfunkenstrecke: Quenched Spark Gap.

Nordlicht, nicht wahr? Northern lights, is it not?

Dummes Rindvieh: Stupid piece of cattle.

Grosses Kommando: General Headquarters.

FRENCH

L'eclateur rotatif et les bouteilles de Leyde: Rotary spark gap and Leyden jars.

Le President de la Republique: The President of the Republic.

Monsieur le President! Attention! Allez! Mr. President, Ready! Go!

Messieurs, le jour de gloire est arrive, vive la France! Gentlemen the day of glory has arrived, long live France! (This is partly from the second verse of the "Marseillaise")

Le "cirque" du Baron d'Unterrichter! Ils sortent hors de combat! Baron vom Unterrichter circus! They are out of the fighting!

Monsieur le President, toute l'armee Allemande est en retraite: Mr. President, the entire German army is in retreat.

The End

POLITICS MURRAY LEINSTER



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*Politics, though it may not be generally understood, is definitely a science and should be treated as such. In this story our well-known author concerns himself mostly with the science of politics as it concerns naval operations and pacifism, etc. The same laws might be just as effectively applied to prohibition or the unemployment problem or the future of our race—and it is the future which concerns us in these pages.**

**This is the original blurb used when "Politics" was first published.—Ed.*

Illustrated by MOREY



"The War of the Pacific has at least taught one lesson to naval strategists. No naval force can ever be said to be inconsiderable, if officered and manned by a capable and determined personnel." (*Modern Sea Power*, Gracame, New York, 1932.)

LIEUTENANT MacREADY saw the enemy from the *Minnesota's* fighting-top and rejoiced with a bitter rejoicing at the sight. This was in August of 1934, you see, just four days after the Battle of Hungars' Bank, and the *Minnesota's* whole ship-company thirsted for vengeance, both upon the enemy and the politicians who had sacrificed the rest of the fleet to win an election. The politicians were safe, but the enemy was here, and the *Minnesota* tore through the water toward them with the speed and fury of an avenging Nemesis.

"Enemy in sight, sir," said MacReady crisply into the telephone transmitter strapped to his chest. "Bear-

ing—"

"Already reported and ranged," said a curt voice in his earphones.

MacReady felt a little shock of surprise. Then he remembered and felt lonely and useless. He looked down. The guns of the top forward turret were winding up to extreme range. The top turret was coming around. He saw monstrous flames. The shock of the discharge reached him even before the blast of the explosion tore past the fighting-top. Three sixteen-inch guns had gone off. It was a ranging salvo. The shells were invisible, screaming demons of steel and explosive; hurtling upward now, but they would descend nearly twenty miles away and it was Lieutenant MacReady's task to watch their fall. Or it had been his task until the new range finders were installed while the wreckage of that boiler-explosion was being repaired. And at any instant it might be his task again.

He counted the seconds; refocused

his glasses; wet his lips. Somehow he knew that guns were swinging below him. Grim, gray-painted tubes were moving slowly to new positions, pointing ahead. He saw the enemy vessels vaguely. There was what looked like a *mêlée* of ships on the horizon's edge. Two huge hulks, one of them listing visibly even at this distance. That would be the *Langley*, the aircraft-carrier. Her sister-ship seemed a shade low in the water, but at this distance one could not be sure. Over and about the distant shapes, tiny motes danced. Aircraft. Army planes from shore, fighting in the place of the naval aircraft that had shared in the disaster of Hungars' Bank. And there was the *Seattle*, on fire but fighting savagely. He saw the flashes of her guns. The *St. Louis* was with her. They were putting up a rear-guard action to enable the aircraft-carriers to get away. Those tiny specks were the destroyers. American destroyers. Half-wrecked and battered but fighting gamely as they limped homeward . . .

The ranging salvo splashed. Three tremendous waterspouts, rising simultaneously, high above the fighting-top of any ship afloat.

"Right six, up two—" snapped MacReady.

The *Minnesota* burst into flame beneath him. Lieutenant MacReady started at the blast of sound. He was dazed by the mere shock, but he knew that every gun that could be brought to bear ahead had fired in one colossal burst of flame. And before his range-correction was completed!

His ear-phones barked:

"Range that broadside."

"Y-yes, sir," said Lieutenant MacReady.

He began to count the seconds. The lower forward turret was shifting slight-

ly. Twenty-two, twenty-three—. The three guns spouted flame and dingy-brown smoke. This was the very latest constant-pressure powder, guaranteed by the ordnance-department not to vary more than one thousand pounds to the square inch breech-pressure even under service conditions . . . Fifty-eight—Fifty-nine . . .

The *Minnesota* was making twenty-eight knots. Blue water flowed past her with a deceptive smoothness. One of the distant aircraft-carriers began to spit tiny flames from its anti-torpedo battery. There was a flurry of destroyers—American destroyers meeting an attack. Lieutenant MacReady could see the enemy ships clearly now. Four big ones besides the destroyers. Pocket-battleships, ten thousand tons, with more speed, more armor, more hitting power than anything else twice their size afloat. But the *Minnesota* was a forty-thousand-ton ship, the biggest battleship in the world. She was, incidentally, the only first-line ship left to the American Navy after the Battle of Hungars' Bank.

The broadside struck. A monstrous mound of water rose to an incredible height. The stern of an enemy ship showed from behind it. The rest of the enemy vessel was hidden behind the broadside-splash. It seemed one single, volcanic eruption of water.

"Right one-half," said Lieutenant MacReady into the transmitter before him. "Up—"

The mound of water began to fall. The stern of the enemy ship tilted with its descent. It rose upward till the keel showed. It dived slowly . . .

"By God, sir!" said Lieutenant MacReady shrilly, "She's sunk!"

Sixteen-inch shells are not good medicine for pocket battleships. MacReady swung his glasses swiftly. There was a

ranging salvo of shells still aloft. It was his duty to spot their fall . . .

He saw the splashes. Two of them. One was short. One was an over. The third . . . The stern of the enemy ship grew suddenly hazy.

"Straddled!" barked Lieutenant MacReady.

But the terrific concussion of the ship's whole forward battery tore at his chest. He felt something warm trickling down his chin. His nose was bleeding. He counted seconds with a strained attention. Another ranging blast below. There was a sudden roaring overhead. Two enemy bombers with six fighting-planes escort were racing toward the ship. The army planes from shore were diving for it . . . The whole anti-aircraft battery of the *Minnesota* barked savagely, twice, MacReady heard terrific concussions and the sound of a dogfight going on somewhere up aloft.

"I'd be happy," thought MacReady in savage satisfaction, "if only some of our politicians were on those ships out there. We're shooting like a streak. We couldn't miss if those damned pol—"

A monster mound of water rose up, obliterating one of the three remaining pocket-battleships. MacReady's lips formed the word "*Straddled!*" but there seemed hardly any need. The mound slowly flattened out and the sea was clean where it had been. A pocket-battleship can stand an amazing lot of pounding, but there simply isn't any armor that will keep out a sixteen-inch shell. And when several of them strike at once, the result is deplorable. Seconds later the third pocket-battleship was silhouetted by splashes. The whole fabric of the *Minnesota* shuddered beneath MacReady as for the third time every gun that could be brought to bear was fired in one world-

filling blast of sound. And seconds later a fourth ranging salvo . . .

Splashes began to rise about the *Minnesota* herself. But a ten-thousand-ton ship is not a steady firing-platform, and though it may carry armament far out of proportion to its size, it is really designed for fleet work, with smoke-screens, aircraft spotters and other aids to efficiency. The *Minnesota* was a self-contained fighting unit, capable of fighting like a whirlwind, and it was taking the offensive. Which was an advantage in itself. One shell fell fifty yards from the *Minnesota's* side. The next salvo from the ship that fired it should have done some damage.

But then the third broadside struck, and when the sea subsided, a pocket-battleship was rolling over with a grave dignity to turn turtle and sink. And seconds later the fourth ranging salvo struck, and as its splashes leaped forward, the *Minnesota* roared for the fourth time . . .

Lieutenant MacReady was dazed and dizzy. He felt the ship changing course beneath him. Three broadsides had struck and three ships were sunk! Of course the *Minnesota* carried the heaviest metal of any ship afloat, but it wasn't natural! There'd been no time for the spotting of shells and the correction of range. Just a ranging salvo, and as it sent splashes skyward, the whole forward battery of the *Minnesota* flamed. No delay. No waiting. Above all, no error! The *Minnesota* fired every gun that it could bear. Twenty miles away and a long time later four acres of sea arose mountainously—with scattering splashes outside—and anything afloat in that four acres of sea simply ceased to exist.

It happened again now. The fourth broadside struck, it seemed squarely. When the turmoil of its arrival ceased,

the fourth enemy pocket ship was still afloat, but explosions were coming from it with lightning-like rapidity. And suddenly it vomited flame from somewhere amidships, broke jaggedly in half—and the sea was clean.

The *Minnesota* had already changed course. There were only enemy destroyers afloat now, after only four broadsides. The distant American ships drew to one side, fighting savagely as they moved. A torpedo struck home somewhere out there, and a thin sliver of metal which was an American destroyer upended and went down in a clean dive. And the air seemed suddenly full of buzzings as of a myraid mosquitos.

"Lieutenant MacReady," said the curt voice in his headphones. "*You will not be required to spot ranges as long as the new range-finders function. You will, however, search for possible subs, and especially for torpedo-trails.*"

"Yes, sir," said Lieutenant MacReady exultantly.

He turned to grin at his fellow-spotter in the forward fighting-top. A ringside seat at the big show! Enemy aircraft were racing for the *Minnesota*, but the Army ships from shore were taking a deadly toll. MacReady glanced back at the distant thin line of the coast. Motes were visible in the sky. More army planes, coming out from land. Fighting-planes all, save one squadron of heavy bombers with a haze of tiny pursuit-planes whirling before it, in order to serve as a protection.

A pall of blackness arose far away upon the sea. The enemy destroyers were making a smoke-screen. The *Seattle* and the *St. Louis* were the targets toward which the lengthening spear-head of blackness reached out. They had been under heavy fire from the pocket-ships, before the *Minnesota*

came out. If the destroyers could sink them and the aircraft-carriers, it would amount to victory. Destroyer-attacks in daylight against ships like the *Minnesota* are unhealthy, but the lesser and already-crippled American ships might be wiped out.

But the *Minnesota* spouted flame from fifty gun-muzzles. The anti-aircraft guns barked in one monstrous volley. They barked again. There were terrific concussions up aloft, and Lieutenant MacReady saw a huge ball of yellow smoke—T. N. T. smoke—spreading with an enormous velocity in mid-air.

"Got a bomber!" he whispered to himself. He wiped the blood off his face and grinned from ear to ear with sheer excitement.

The broadside landed, fifteen miles away. And it struck, not as a concentrated blast of sheer destruction, but as a barrage. Separate splashes rose in glittering similitude of stalagmites on a lime-cavern floor. But each pinnacle, shining in the sun, represented the point of fall of a six-inch shell—they were small and few—or an eight-inch shell—there were more of them—or of mighty sixteen-inch shells themselves. The broadside of the *Minnesota* had deliberately been spread out to cover a huge area thinly. But a destroyer does not need much pounding to be put out of action. The tip of the spearhead of smoke heading for the American destroyers simply ceased to be. And the *Minnesota* flamed again, and again, and again. Six times, at fifteen-second intervals, she belched out coruscating waves of fire. A long time later the broadsides fell.

The anti-aircraft batteries barked savagely. Firing like the heavy guns; simultaneously salvos at single targets at single instants. Picking out the

enemy bombers and leaving the enemy single-seaters to the army ships. Over and above the droning of many motors there was now the intermittent sound of colossal explosions. Enemy two-thousand-pound bombs were going off in mid-air as the bombers that carried them were wrecked by screaming hails of metal.

MacReady fixed his glasses upon the distant smoke-screen. It was ragged and torn. A single enemy destroyer showed clearly for an instant. It was changing course and streaking for the far horizon. The rest were gone! The forward turret boomed a ranging salvo. MacReady watched feverishly. Army ships coming out from shore in a never-ending stream. Somewhere far aloft—. The ranging salvo struck! A quarter-mile over! But the forward battery crashed forth for the tenth time in this action. Every gun bearing ahead crashed . . .

MacReady was bleeding at the nose and ears from the concussions that had battered at him. He was bruised all over. He was deafened and his blood-shot eyes streamed water, but he sat in a stilly glow of satisfaction, wishing only that certain politicians could be upon that panic-stricken destroyer that fled from a hail of death.

He saw the shells land. The fleeing destroyer was emitting a dense cloud of smoke to conceal its trail. But it was lifted a hundred and fifty feet, clear, as contact-fused shells went off in an inferno of destruction. It was flung above even its own smoke-screen. MacReady saw it break in pieces and vanish again behind the smoke.

And then there was only the buzzing of a multitude of motors aloft and all around. The tearing, rasping chatter of machine-guns became audible. Mac-

Ready gazed upward and saw the Army planes hunt down ruthlessly and relentlessly every enemy plane that was aloft. With bitter satisfaction he watched the flying things go fluttering helplessly downward, or dive as plumbets of flame into the sea. His satisfaction was only tempered with a slight regret when the last enemy pilot fought a magnificent lone duel with an Army formation, and entangled two of them in his final, blazing fall.

The *Minnesota* shepherded the other American ships toward the Golden Gate, gleaming and unmarred and belligerent. There were two scout-cruisers under her protection, the *Seattle* and the *St. Louis*. The *Seattle* was still on fire, but was getting it under some control. There were two aircraft-carriers, one of them listing heavily. There were seven half-wrecked destroyers. That was all. They went limping slowly toward the shore, through waters littered for a space with wave-wetted wings . . .

They went ahead of the *Minnesota* and entered the harbor. They anchored, watched by silent, stunned, almost panic-stricken crowds which thronged the waterfront and did not cheer at all.

Because this was four days after the Battle of Hungars' Bank. The enemy fleet held the Pacific. The *Minnesota* alone excepted, the whole first line of the American battlefleet was at the bottom of the sea. Save for a few submarines and perhaps half a dozen still-fugitive destroyers—now being hunted down by the victorious enemy—these limping, shattered carcasses of ships constituted the Navy of the United States of America.

And one day before, the enemy had scornfully broadcast the terms on which it would make peace. Hawaii,

Guam, the Philippines, and the Panama Canal were the only territorial demands, but an indemnity was insisted on and the enemy also required the surrender of the *Minnesota* and a pledge that the United States would never build more than a minimum number of small, slow cruisers in the future.

Throughout a panic-stricken nation, strong pacifist political pressure was being brought to bear to force Congress to accept those terms.

"There have been in the past, and there will be in the future, attempts by politicians to dictate naval and military policies for other than naval and military ends. But never again will a civilian official of the United States dare issue a direct order governing naval or military operations! He would be impeached, at least. In the present temper of the populace, he would probably be lynched." (*Address to graduating class, U. S. Naval Academy, by the Secretary of the Navy, 1933.*)

Lieutenant MacReady had been at Annapolis with the commander of the torpedo-boat-destroyer, *Wasp*. In those far-off days MacReady had been a lowly plebe, while the destroyer-skipper was an upper-classman, but they foregathered on equal terms in MacReady's quarters on the *Minnesota*. MacReady offered libation and the *Wasp's* commander raised his arm.

"Here's hell to politicians," he said grimly. "They sank our fleet!"

MacReady made an appropriate gesture, accepting the toast.

"Now shoot it," he commanded. "What happened?"

"If you want to know," said the *Wasp's* commander bitterly, "they sent the battlefleet out with orders to avoid any action. An election is coming on. Pacifists are strong, politically. If we blew the enemy out of the water, they'd denounce us as murderers, vote against the Administration, and change the political complexion of Congress. Therefore, the Admiral was told to

avoid a fleet-action until after elections if he could, and if he couldn't, to make sure it wasn't decisive defeat for the enemy. Isn't that pretty?"

"Dam' pretty," said MacReady ironically. "Oh, dam' pretty!"

"The enemy fleet was spoiling for a scrap," went on the *Wasp's* commander more bitterly still. "They've been building pocket battleships, playing with 'em like kids with a new toy. On paper they had more gun-power than we had, in more but smaller ships. We had the weight and the punishment power. They thought they could lick us. They came over to force a fleet action. They ignored Hawaii and came on with a supply-fleet ten miles long behind 'em. And you can't handle a modern fleet, with destroyer-screens and the like, without using wireless. We were picking up their code stuff and trying to decode it. They were doing the same with ours. Both sides were using radio direction-finders, of course. They knew where we were, and we knew where they were. But they wanted a fight, and we were ordered to avoid one. It couldn't be avoided!"

"Hit first, hit hard, hit often!" quoted MacReady. "But tell me, old man, why did the Admiral split his fleet?"

"Direct, specific orders from Washington!" snapped the *Wasp's* commander. "We knew the enemy was determined on a fleet-action and headed straight for us. The Admiral reported to Washington that a general engagement was absolutely unavoidable, and an attempt at anything but a decisive victory was stark madness. He got detailed orders—the plan that sank the fleet! Signed by the President as commander-in-chief. Politics! Arm-chair strategy that looked all right on

paper, but—my God! The battle-fleet was to proceed northwest, with its radio silent. The two aircraft-carriers, with escorting destroyers, were to proceed southwest. The carriers were to keep planes aloft with their wireless outfits going, simulating a battle-fleet in movement. The enemy would head for them. At the logical instant they would cut off their wireless and run. And the battlefleet would make a demonstration proving its actual position to be a thousand miles or so from where the enemy thought it was. A trick to gain time. A trick to postpone a battle until after election. That's all! They say the Admiral cried when he read the order."

"Here's hell to politicians," said MacReady morosely. "Why didn't it work?"

"An air-photo from forty thousand feet," said the *Wasp's* commander sardonically, "is of no ordinary use to anybody. It's taken through an infra-red filter that fog or clouds can't bother, but the Army doesn't use 'em because they don't give enough detail. But they'll tell the difference between a battlefleet and a pair of aircraft-carriers, all right!"

MacReady groaned. The *Wasp's* skipper went on grimly:

"That must have been how they did it. Silenced high-altitude planes and photos taken through eight miles of haze. Anyhow, six hours after the battlefleet headed northwest, the enemy fleet split up too. They duplicated our maneuver. They sent their supply-fleet to meet us, with its wireless going full blast to simulate a battlefleet, and they sent their battlefleet to meet ours, full speed ahead and with its wireless shut off too. But they didn't have their carriers behind!"

MacReady groaned again.

"The dirigible *Akron* sighted them," said the destroyer-skipper coldly. "They got her in twenty minutes, after she'd sent the alarm back and crashed twelve planes that attacked her. But that was too late. We were eight hundred miles away, with the whole air-service! You should have seen those carriers shoot planes into the air! One—two—three they went up! Streaking for the fight! It'd be four hours before the fastest of them got there, but they went! And the damned thing was nearly over when they arrived. Our ships had gone into action with only the ship-planes to spot and fight for them. The enemy had four carriers—little ones, but they carried a hell of a lot of planes. Twenty minutes after the opening gun, they'd wiped the skies clean above our fleet. There were only six planes spotting for our whole fleet during the second half-hour of the action. With smoke-screens in use, you know what that meant! There were only three during the last hour! The enemy laid down smoke-screens and potted at our ships from behind 'em. Our destroyers went through the screens and tried to do the spotting the air-service should have done. Suicide, but we got two of their pocket-ships and one of their super-dreadnaughts that way. Meanwhile our boats were going to hell and gone. When the airfleet arrived there was only the old *New York* and the *Michigan* above water in the first line, and we'd lost two-thirds of our destroyers. But they stayed afloat, those two old tubs, taking all the punishment the whole enemy fleet could give 'em, and passing out all they had—until our planes ran out of gas! It was all over then! They'd flown eight hundred miles to get to the fight. They were nearly out of fuel when they got there. And

the enemy expected to gather them in when they made forced landings. Pretty idea, wasn't it?"

Lieutenant MacReady said pungent words.

"They did get three," said the commander of the *Wasp*, calmly. "But the rest somehow got blown up or crashed by their pilots before they jumped for the water. It annoyed the enemy. They left the pilots—in the water."

Lieutenant MacReady said more pungent words—much more pungent.

"Meanwhile we on the decoy-fleet had been tipped off. Oh, a grand time we had! Orders first were to try to join the battlefleet. An hour later the old Admiral knew he couldn't hold out until the air-fleet got there, and ordered us to streak for home. The planes couldn't be turned back. They were gone anyway. He tried to save the carriers and the ships with them. We turned and ran."

The destroyer-skipper gesticulated bitterly.

"Then the destroyers from the supply-fleet hit us. We'd sent every plane we had to the fleet-action. They'd done nearly the same. So we fought 'em off. For four days we'd been running away from them, fighting night and day, when the *Minnesota* turned up. Those pocket-ships only got here this morning. Four days and nights of fighting, Mac! We sank three of their destroyers for every two of us they got, but there were twenty-four of us when we started out, and there were seven of us who came in, and the pocket-ships would have finished us if the *Minnesota* hadn't come when it did!"

There was silence. There was no noise anywhere on the *Minnesota* except an unplaceable dim whine which was a dynamo running somewhere. Out

the porthole of MacReady's cabin could be seen the dim bulks of the two aircraft-carriers that had been brought in port that day. The *Langley* still listed heavily to port, but there were lighters clustered about her side and arc-lamps burned brightly. At three separate points, clusters of arc-lamps burned vividly on the harbor-water.

There was a droning hum overhead. It passed on and out to sea.

"Army planes," the commander of the *Wasp* said heavily. "Doing naval patrol. At last the Army can smother their air-force if they try any bombing. But what good'll it do? I haven't got a ship any more. My engines were shot to hell. They're cutting off the bow of the *Wasp* with an underwater torch. They're going to weld it in place of the *Waddy's* bow, which looks like a full-blown rose. And our stern goes to replace the *Stingray's* tail. Out of three wrecks they'll make two ships that can steam. It'll take four days, with underwater welding. But what good will it do?"

"It depends," said MacReady without hope, "on our shooting. And on politics. You saw our shooting today?"

The *Wasp's* commander nodded.

"I thought of you up there in the fighting-top, spotting shells. The air was clear and you could do it—"

"I didn't spot a shell," said MacReady. "The new range-finders have taken my job away from me and do it ten times as well. We've got fire-power now, old horse! And fire-control! We've got the new range-finders in. Those parallel-beam finders they've been working on for years."

His companion looked puzzled.

"All electrical," explained MacReady. "No observer at all. Two telescopes, one at each end of a base-

line, and mounted exactly parallel. Fitted with photoelectric cells instead of eyepieces. You swing the base-line around and they sweep the horizon. And a ship on the horizon changes the amount of light that goes through a narrow slit to the photoelectric cell. It registers the instant the first telescope hits the stern of the ship. A fraction of a second later—because the telescopes are exactly paral-
—the ship-image registers on the other cell. Both cells register exactly the same changes in current-output, but one is a fraction of a second behind the other. Knowing the rate of sweep in seconds or mils of arc, if one photoelectric cell lags behind the other one mil, and you know the base-line, you work out the distance in a hurry. See?"

"Complicated," commented the destroyer-skipper distastefully.

"Complicated, sure," agreed MacReady readily. "But man! Does it work! Those range-finders sweep their field ten times per second, ranging each way. We range the enemy ship twenty times per second and get electric impulses to read off. But better than that, we range our own shell-splashes and the target together, with the same instrument, at the same time! See the point?"

"M-m-m-m. That looks good!"

"It's even better!" insisted MacReady. "We get electric impulses, instantaneous, instead of observer's figures. The impulses go to an integrator that calculates the range and declination. That feeds into a computer that works up the firing-data—barometer, wind, humidity, and so on—and that goes to a relay that lays the gun! All working at the same time! The gun's laid on the target from the first second or two. Constant ranging gives speed and course of the target."

The computer dopes 'em out, shifts the gun to where the target will be when the shells land, and we fire a salvo. And then the splashes get ranged by the same outfit in relation to the target! Errors in the firing-data and powder-lot—even wear on the gun-gears—are automatically corrected! Then we let go a broadside. It blows hell out of the target! Gun for gun and ship for ship, the *Minnesota's* the best fighting-machine in the world! And half our superiority comes from those finders. Why, man! our anti-aircraft finders range a plane, compute its course and speed in three dimensions, lay twenty guns on its most probable position at the time of shell-burst, and fire the guns—all in two-fifths of a second! They can do everything but play 'Home Sweet Home' on a piccolo!"

"Then," said the commander of the *Wasp*, "why weren't the other ships fitted with them?"

"Dear heart," protested MacReady in fine irony, "haven't you ever heard of politics? We have a few men with guts in Washington. We have also a large number of elderly maiden ladies. The range-finders were in production. They were shipped here to be fitted. War broke out. There was a wave of popular sentiment against the rude and brutal practice of defending one's country against anybody else. The fleet was ordered to sea at once, because if it didn't get to sea, the pacifists might manage to forbid its sailing! With the old range-finders and air spotting we were on equal terms with the enemy. We could fight, anyhow! But even after the fleet had sailed, the political pacifists managed to get those orders issued that you wot of, and which sank our fleet. Politics, you see! It's sweet and pretty? And the *Minnesota* has

the range-finders installed simply because one of our boilers blew up. It killed sixteen men. We had to be left in port, and while we were getting the mess cleaned up and repaired the Skipper put in the new finders. That's why we're damned near match for the whole enemy navy!"

"And what good does it do?" asked the commander of the *Wasp* bitterly. "You're making 'em a present. The peace terms call for the surrender of the *Minnesota*, and those damned politicians are going to accept 'em!"

Lieutenant MacReady leaned forward confidentially.

"Old boy," he said under his breath, "the Secretary of the Navy is *not* an elderly maiden lady. There has never yet been an American warship surrendered without a fight. Our skipper has told him we can have some destroyers ready to fight again in six days, and asked permission to commit suicide in his own ship. The Army's going to help, by fighting off enemy planes if an action takes place within a hundred miles of shore. So if the enemy wants the *Minnesota*, he'll have to take her! The Secretary thinks he can hold off surrender, in Washington, for those six days. If he can't, we go out before, without the destroyers, and smash our wireless so we can't be ordered to come back. And it will be suicide, and highly immoral to fight against a gallant enemy who has sunk our ships and left our plane-pilots to drown because they blew up their ships rather than hand them over, but—well—it'll be better than the other thing, won't it?"

"You're dam' right!" said the commander of the *Wasp*, hungrily. "I can shovel coal, or wash mess-dishes, or—or—"

"I think," said Lieutenant Mac-

Ready magnanimously, "that it can be arranged. The Secretary of the Navy will be fired. The pacifists will write in the school-books that we were murderers. But maybe, if we work it right, the politicians won't object. Because we'll be sunk. I know I'd hate to be a politician and have a Navy man look me in the eye!"

The commander of the *Wasp* stood up.

"I'm going back to slave-drive my men," he said feverishly. "We've got to get those destroyers ready."

"A politician is a man who believes that the greatest catastrophe that can possibly befall his country is the election of somebody else to the office he wants." (*Politics*, Leinster, New York, 1931.)

The *Minnesota* lay at anchor in San Francisco harbor. The sun shone down placidly upon the scene. There were flags flying everywhere. Some of them were "peace-flags" and they flew brightly. Some were American flags. They were at half-mast. The city was still and dead. Newspapers came out at frequent intervals with huge hundred-and-twenty-point headlines and very nearly identical contents. Two destroyers had made port in Alaska. They had refueled and gone to sea again. One destroyer, battered and in a sinking condition, had made the port of Vancouver, B.C., and was unable to put out again. She was interned. It was rumored that American submarines had located the enemy fleet with radio direction-finders and had submerged in its path. Motors silent and men still as death, they had allowed the screen of destroyers and light craft to pass overhead. They had risen among the capital ships of the enemy navy. They had sunk three ships before they were destroyed. The enemy command denied the rumor. There was no other war news. Peace news was ora-

tory in print, accounts of meetings and resolutions and other activities of the persons opposed to war even in self-defense.

In San Francisco the real signs of life or energy were displayed in two places only. One was the Navy Yard, where men worked frantically against fate with electric-welding and oxy-acetylene apparatus, doing work that required months of time and elaborate equipment in days instead and with make-shift materials. The *Langley* was having a patch made for the torpedo-blast in her side. It was being welded in one piece on shore. It would be sunk alongside and welded in place by Ellsworth underwater torches in the hands of divers. The *Wasp* was a fragment of herself, her bow and stern cut away and only her shell-torn middle section beached in shallow water to rust away. Every one of the returned vessels was aswarm with men. Their own crews were laboring like madmen to get them in shape to steam. They did not hope to attain to real battle-efficiency. They only hoped to patch them up so they could share in the last foray of the fighting forces of the United States Navy. If they could steam, and if they could fire a gun, the crews of these ships would mutiny if forbidden a place at the suicide of the fleet.

The other spot, where activity was in order, was the headquarters of those organizations which opposed the prosecution of war against even a declared enemy. Speakers bustled in and out. Banners flew and gaudy placards smote the eye. Orators moved to strategic points to explain to half-stunned crowds that war was evil in itself and that the disaster of Hungars' Bank was the direct act of Providence, disapproving of America. Suitably ed-

ited portions of Scripture were available for distribution. And constantly through that activity for the service of abstract good ran the threat of political action, and an insistence upon the power of little mean men at the polls to undo the actions of bigger men who were deaf to the clamor of fanatics.

The orators ranged everywhere. Marine sentries stopped them at the Navy Yard gates, firmly refusing entry even to deputations of sad-eyed, hysterically righteous women intent upon pleading with the sailors not to murder the sons of other women, regardless of the fact that those sons of other women had not hesitated to sink the American battle-fleet. It was uncomfortable anywhere to be in a military or naval uniform, because of the reproaches of convinced opponents of war. Pacifism had become respectable within the past four years, and its proponents took full advantage of the immunity accorded to respectable men. An enthusiastic orator even had himself rowed alongside the *Minnesota* and began a moving speech addressed to the sailors, advocating mutiny and consistent violation of all the articles of war, and was lured below the slopchute by a sergeant of marines. It was pure accident, of course, that the ship's garbage was discharged at just that time, but an indignant protest was immediately telegraphed to the Secretary of the Navy and all other Cabinet officers.

That was in San Francisco. In Washington there were parades in favor of peace. The President—being by American custom not only a Government executive but also the leader of a political party—was forced for the sake of his Party's chances in the coming elections to devote four hours in one day to the hearing of spokesmen for different groups of anti-war delegates

from anti-war societies throughout the nation. The War and Navy Departments were picketed by determined, passionately sincere advocates of peace at any price. Senators and members of the House of Representatives were besieged by opponents of carnage.

In London, the American Ambassador was drily informed that the British Government, through sympathy with the present embarrassments of the American Government, would delay for the present the taking up of the unquestionably just claims of British subjects against the States which, while in the Confederacy, had sold bonds in England and later repudiated them. The American Ambassador took the hint, and cabled desperately that if the United States announced its renunciation of self-defense, that its standing before the world would be forever gone. In Germany there was laughter and ironically bitter comments in the journals. In France there was alarm and indignation at the threatened disappearance of an ally through what its official press termed national suicide. In Central and South America there was pure panic. Republics which heretofore had maintained a chip-on-the-shoulder attitude toward the United States now made frantic representations that the Monroe Doctrine would be without force behind it. They begged, they implored, they pleaded with the United States not to adopt a course which would ultimately involve their ruin with its own.

But in the United States, foreign opinion had no weight. Pacifism was an issue which would decide an election. It would determine whether Tweedledum should stay in office or be thrown out for Tweedledee. It was a matter of politics, and therefore much more important than national

prestige or national security or the national honor itself to all the Tweedledums in office and all the Tweedledees without.

The Secretary of the Navy was fighting for time, with the Secretary for War ably seconding him. These two men, at least, would lose their political status with the triumph of a no-defense attitude in the coming elections. Their place was to be taken—so the righteous had it—by a Secretary for Peace. And they fought tooth and nail, by argument and persuasion and browbeating and cajoling, to stem the panic of Congressmen in terror of political oblivion. But on the fourth day the Secretary of the Navy wired to San Francisco in code:

"Peace proposals considered in Congress tomorrow. Will probably be accepted the day after. I take responsibility of ordering you to use your own judgment in operations against the enemy."

The Secretary of the Navy would have committed political suicide when the order became known. But he would be able to look at himself in a mirror without shrinking. The captain of the *Minnesota* read the telegram with a grim and weary smile. He tossed it across his desk.

"We'll go out in the morning. The only question is, is that crazy MacReady right? And how many destroyers will we have?"

"Ten,* sir, plus the scout-cruisers and the aircraft carriers. And the planes that went out to try MacReady's idea are due back at any moment, sir."

The message from the Secretary of the Navy neither interrupted nor intensified the feverish labor going on upon the battered ships that had limped into port four days before. An inter-

ruption would have slowed things up. An intensification would have been impossible. Repairs were being made with a reckless disregard for mere deficiencies in materials or means. One marvelous assemblage of plates and machinery had parts of six separate vessels in it. Another was repaired from four—one of them a troop-transport stolen from the Army while somebody painstakingly looked the other way. Depth-bomb sowers were being equipped for a new purpose, and a strictly improvised munitions-plant was unloading Army shells of one type and reloading their contents into naval shells of another sort entirely, which lacked full charges.

And Lieutenant MacReady was rapidly attaining to a state approaching heaven. A flight of Navy planes had gone out to sea, far beyond the view of pacifists and politicians. They had laid down a smoke-screen of the thickest and heaviest sort, and made certain tests. Then they laid down a second and made other tests. And they went roaring back to shore with Lieutenant MacReady filled with a quiet rapture.

He found the commander of the *Wasp* in his quarters, picking threads out of one sleeve of his uniform-coat.

"Pulling off some gold braid," he said ruefully to MacReady. "Mac, there's no room for me on this damned ship. So I'm pulling some gold braid off. I'll look like a petty officer without it, and I'm stowing away till the action begins."

"Hold on," said MacReady unsteadily. "I'm sort of dizzy with success. But you've a right to share in it. You gave me the idea first. I'll go to the Skipper and ask."

"What idea. What in hell?"

"You talked about the enemy using an infra-red filter to photograph the

battlefleet through eight miles of haze. It made me think. Have you ever seen the sun through a smoke-screen?"

"Of course! It's red."

"Quite true," said MacReady. "The blue rays are filtered out by a smoke-screen or by dust. Only reds remain. The sun gets redder as the smoke-screen gets thicker, because only the very longest of visible rays get through. The question came up, did infra-red rays get stopped at all?"

"Mac!"

"The photoelectric cells in our range-finders," said MacReady with a strange precision, "are sensitive to infra-red. We went out to sea with a baby range-finder. We put on camera-filters that shut off everything but the infra-red rays. The range-finder worked perfectly well. Then we laid down a smoke-screen. The finder still worked. Then we laid down another one, thick and wide and deep. And the finder still worked. We're going to fight the last fight of the *Minnesota* that way. We'll be independent of aircraft for spotting, even if we're deep in the middle of a smoke-screen ourselves. And so I'll see if I've got a pull with the Skipper."

A long time later he came back, his eyes glowing.

"You'll sit up in the fighting-top with me, old horse. We go into action at dawn."

The commander of the *Wasp* started up.

"Praise God! You're sure?"

"At the present moment," said MacReady evenly, "the enemy fleet is bombarding Seattle. The word came through five minutes ago. It's steaming past, on the way south. Every ship, as it passes, flings a few broadsides into the town. The present estimate is that half the civilian population is wiped out, and the fleet is still passing. The

enemy intention is evidently to hasten our acceptance of their peace terms."

The *Wasp's* commander clenched his fists and swore helplessly.

"We'll sail in time to meet them just after dawn," said MacReady calmly. "The *Minnesota* and what destroyers we've patched up, against the battle fleet that sank our own. Old horse, we ought to have a gaudy suicide. And so—" He poured libation. "Here's hell to politicians!"

"Strategy was defined by General Forrest, C. S. A., as 'getting the mostest men there the firstest.' Fire superiority may be similarly explained as getting the most shells to the target first. And fire superiority is the lesson to be learned from the Battle of the California Coast." (*Modern Sea Power*, Grahame, New York, 1937.)

The dawn came quietly over the hills to eastward. In a vast silence the darkness thinned and the stars paled, and little winking shore-lights faded to obscurity as the sky turned gray, and nearly white, and then took on its normal blueness with only a small pinkish glow above the sun itself.

The *Minnesota* was headed north. Ahead of her there were five destroyers in line, with a scout-cruiser at either end. The monster aircraft-carriers trailed behind her, their decks white with land-planes. More tiny destroyers darted here and there about them. In the rear, again, two fleet-submarines ploughed along at twenty knots. They had come into harbor with their crews bleary-eyed from exhaustion just three hours before the *Minnesota* sailed. And they were going out again, refueled and with their torpedo-racks refilled, with half their crews sleeping the twitching slumber of exhaustion in their bunks. Fresh men would navigate them until the action began. Then the exhausted men would rise and share in it. It was their right, and they had demanded it.

The rim of the sun peered over the eastern horizon. Vividly scarlet, it was not the dull-red ball that presages a sultry morning. It came slowly and heavily up over the edge of the world and like some monstrous balloon broke awkwardly free and swam around into the sky. The sea became abruptly a cerulean blue, and the waves glittered and flashed in the sunshine.

Lieutenant MacReady, up in the *Minnesota's* fighting-top, turned to the former skipper of the *Wasp*. He pointed to a trailing wake of gulls, fluttering tirelessly after the ship.

"I've watched those things for hours, in my time," he observed. "They'll see something, today. Thank God we've got clear weather! Old horse, we've got a fine day to die in!"

The skipper of the *Wasp* was searching the sky ahead through binoculars.

"The enemy," he said briefly. "See?"

He pointed. An infinitesimal speck against the pale-blue sky was hovering too steadily to be a gull. Lieutenant MacReady spoke crisply into the transmitter strapped to his chest. There was a sudden flurry over on one of the aircraft carriers. Half a dozen planes shot upward, climbing steeply. They passed nearly over the *Minnesota*. The two in the fighting-top could see the helmeted, goggled head of the last pilot as he went streaking in the wake of the rest.

"Never had much use for the Army," said MacReady absently, with his eyes searching the skyline ahead, "but they're turning out pretty good eggs. They do like a scrap, anyhow."

The tiny fleet moved steadily onward. The sun shone upon the vessels, and they were gleaming and defiant in its early rays. But the *Minnesota* alone was unblemished. Patches showed clearly on the rest. A sailor was absorbedly

engaged in painting something on the *Stingray*. He was trying to cover up a rust-spot that had appeared almost overnight on an unpainted weld.

Silence and stillness. Far overhead, the fighting-planes from the carrier were mere specks, as tiny as the ship they had gone up to destroy. That enemy observation-plane turned tail and fled. The American planes raced after it. They went behind the horizon and disappeared.

The clamor of a gong sounded below. Lieutenant MacReady turned to his companion and grinned.

"Mess! But they'll send something up for us."

The fleet went on. Fifteen minutes. Half an hour. An hour. The sea was clean before them. Then tiny pin-points appeared on the horizon.

"Enemy destroyers," said MacReady. He spoke into his strapped-on transmitters and looked down at the guns. They remained motionless. The *Minnesota* went on steadily, ignoring the distant tiny ships, awaiting enemies worthy of her steel. Her destroyer-escort kept formation. The attitude of the American fleet was that of scorn.

More pin-points. More destroyers. They drew closer, but not too close. They spread about, keeping to a thirty-thousand-yard range. They hemmed in the horizon ahead and to westward. Heavier ships appeared—scout-cruisers. The sea seemed speckled with enemy craft. Light ships closed in the horizon behind the *Minnesota*.

"That's so they can mop up if we try to run for it," said MacReady. "Ready for torpedo-attacks at the end of the action. Lord! There's a bunch of them!"

There were a bunch of them. Three-fourths of the destroyer-force that had come across the Pacific. As many as

the American battlefleet had taken into the Battle of Hungars' Bank. They turned the horizon on three sides of the *Minnesota* into something fancifully resembling a picket fence.

Enemy pocket-battleships came into view, steaming at full speed to be in at the death. They deployed in line ahead, cutting off the *Minnesota* from the open sea. But they did not fire a gun. Now little specks began to appear in the air above the enemy fleet, and still there was no offensive movement. Then the six full-sized battleships of the enemy came grandly over the edge of the world. They moved for an apparently predetermined position.

"This isn't to be a battle," said MacReady. "They're figuring it as an execution—a beautiful example of fire-superiority and fire-control. Considering the psychology of our gallant foes, I imagine they'll try to blow us out of the water with a simultaneous broadside from every ship in the fleet. It would be neat, and probably effective. Or do you suppose they think we came out to surrender?"

The ten destroyers with the *Minnesota* suddenly belched forth black smoke from their funnels and shot ahead. Weaving back and forth, darting here and there, they began to make an impenetrable smoke-screen between the *Minnesota* and her enemies. MacReady flung back his head to look at the land. Yes! A long black thread-like line was lengthening from the shore. Army planes. Five miles from the *Minnesota* that line bifurcated—split in two.

"God bless 'em!" said MacReady comfortably, "they're just on time. They'll give the destroyers a busy morning. Every bomber the Army owns is in that line! We've got air superiority in this action!"

The *Minnesota* was in the center of perhaps a square mile of open sea, with a growing wall of blackness about her. On the fighting-top MacReady saw over it.

He watched the enemy ships building up a precise, ceremonial formation for the destruction of the *Minnesota*. MacReady's eyes gleamed suddenly. The top forward turret swung in place and its guns wound up to nearly maximum elevation.

"They do love ceremony, the enemy," he said gently. "They're arranging themselves for our destruction as if it were a review. If I were the Old Man, I'd not bother about ranging salvos after the first spotting. We've got them all ranged, anyhow, and with one salvo for wind and barometer and so on, I'd fire broadside only."

The *Minnesota's* top turret-guns flashed earsplittingly—the first ranging salvo. The destroyers were weaving madly about, extending and thickening the smoke-screen about her. It would have blinded any other ship in the world, and made her utterly dependent upon aircraft observation. But spotting is exacting work, and the Army observers wouldn't be sufficient in spotting for the Navy anyhow. The enemy evidently counted upon it. The smoke-screen was wide and thick. Here and there it billowed upward enough to obscure the horizon. But a long time later MacReady saw three splashes rising mountainously, near one of the pocket-battleships of the enemy. He opened his mouth automatically to telephone a correction, but before he could speak, the *Minnesota* let loose. And this time she was broadside on to her target. Not only her forward battery, but fore and aft, with all her main and secondary

battery, she flung a hurtling hell of steel and flame toward the enemy. The recoil made her whole vast fabric shudder. Fifteen seconds later she flamed again. Fifteen seconds; the air split asunder with the same concussion. Fifteen seconds . . . With unvarying, mathematical precision, she let go twelve broadsides in three minutes. It was impossible to discover that her gun-muzzles shifted.

She came about in a long sweep. MacReady and the skipper of the *Wasp* ignored their bleeding noses and the bruises of sheer concussion. They swept the horizon, quivering like hounds on the scent.

"One—two—three!" MacReady counted in an awed voice. "Three of them sunk, by God! Thank God for heavy metal! And another one's out of action, or I'm a Swede!—*Ah-h-h!*"

An apparently uninjured speck, against the very edge of the world, tore itself apart with a sudden vehemence. There was a flash and a monstrous ball of dense black smoke. Then there was another gap in the ceremonial formation which was to execute the *Minnesota*. It had either forgotten that the American ship was the most powerful war-vessel in the world, or it had counted upon no more than human accuracy in its shell-fire. But there was no human factor-of-error in the gun-laying on the *Minnesota* now. She was a machine—and the most deadly fighting-machine on earth.

Flashes appeared along that distant line of ships. The *Minnesota* dived into the smoke-screen all about. A destroyer darted aside to give it room. The smoke-screen had been laid in long spreading trails of blackness. From aloft, it would look like a rather untidily executed maze. MacReady caught a glimpse of the fore

deck of the *Langley*—its after deck was blotted out by a hill of densest black—and plane after plane after plane was taking off with the regularity and precision of bullets going out of a machine-gun. He saw a spreading fan of planes rising from another spot—the other carrier. Then the *Minnesota* vanished from beneath him as it went swiftly into darkness. A long distance away he saw the other fighting-top above a sea of black. Black billows rolled lazily about the horizon. He saw a ship on fire, in the enemy line. That was the work of one of the fleet subs. The enemy did not know of their existence or escape. They took a heavy toll, between them, and one of them finally blew itself to atoms beneath the pocket-battleship that rammed it. Which was not healthy for the pocket-battleship.

MacReady heard his companion shouting. He was chattering excitedly into the telephone-transmitter strapped to his chest. A concussion-wave struck him. The ship was firing again. The gas-blasts from the guns blew the smoke-screens crazily about. One; fifteen seconds—two; fifteen seconds—three . . . Six broadsides the *Minnesota* fired from the thickest of its own smoke-screen.

Hell broke loose a half-mile astern. A six-inch shell screamed between the fighting-tops of the *Minnesota*. That was a stray. The form of fire from the capital ships of the enemy fleet was pouring into the ocean where the *Minnesota* might have been, but wasn't. They couldn't see her. Her smoke-screen hid her before they had fired ranging salvos. And range-readings by even trained observers are not much good without trial salvos and spottings. The *Minnesota* had started the action on her own terms, which—with air

superiority on her side—were much better than the enemy had intended.

Two minutes of silence, save for the screaming of enemy shells searching for the ship. The smoke-screen was lengthening and spreading. The *Minnesota* had four square miles of blackness in which to hide, but it was blackness only to the enemy. MacReady caught a glimpse of a monstrous dogfight going on aloft. Enemy aircraft could not spot the *Minnesota* from above their own ships. So intricately woven was her protecting screen that a position nearly vertically above her was essential. The enemy aircraft were trying to get it. The Army ships were keeping them from it. The solitary American battleship was using tactics which not only were entirely new; they were tactics which were impossible to a ship without control of the air, without eyes to penetrate the screen and prevent collision with her tiny consorts, and without utterly perfect spotting for her shells.

Enemy shells shrieked all about. An eight-incher landed somewhere and burst with a sickening detonation. The whole sea seemed to be boiling. Shell-splashes leaped upward above the smoke-screen, glittering in the sunlight. They were visible to the enemy, but not especially helpful without a sight of their target. There was a flickering ball of madly fighting planes a mile and a half to the right. Something huge and winged burst out of it and raced toward the *Minnesota's* fighting-tops, with a dozen Army single-seaters pouring lead at it, and two enemy combat planes dying magnificently in the attempt to protect it.

The big ship's anti-aircraft battery crashed venomously. There was a colossal, an incredible explosion. The huge winged thing vanished in an ex-

panding ball of flame. Two combat-ships shriveled and fell with it. Another reeled and a wing came off, and it began to descend, whirling crazily like a maple-seed. The rest of them turned and went madly back toward the ball of roaring, crackling fighting things.

The *Minnesota* shuddered again. And again. And again. Broad-sides of every gun that would bear, fired from abysmal blackness into the bright sunshine. Storms of screaming metal, flying shrieking through space, to fall twenty miles away. From the tail of his eye MacReady saw a magnificent duel of two fighting-planes ended in the fraction of a second as the trajectory of some ship's broadside passed through the area of their combat. They were annihilated. But MacReady could not see it all. He was battered at and pounded by waves of sheer concussions. He heard a voice beside him, thinly, and it was the commander of the *Wasp*, but MacReady could not make out what he was saying, and did not try. Then he caught a glimpse of the enemy fleet as the rolling billows of the smoke-screen lowered momentarily.

The noise did not lessen for an instant, and the noise was like the din of all hell let loose. But MacReady did not hear it, because something huge over in the enemy lines was pointing its bow skyward and going down slowly by the stern. A monstrous mound of water rose above it as a broadside struck. The mound subsided, and that monstrous ship was only a third of a ship above water. It was going down and down... A pocket-battleship was on fire. A broadside struck one of the enemy's big ships. Fifteen seconds later, another. Fifteen seconds later still, a third. Fifteen seconds later still, a fourth...

"Fire-power!" cried MacReady exultantly amid the tumult of ten thousand explosions. "We've got it! The heaviest broadside in the world! Infra-red screens! Beam range-finders that spot our own shells with the targets they strike! Powder that varies less than a thousand pounds pressure at the breech! Six ships we've sunk, old horse! Six ships! And we're barely scratched!—Why doesn't the enemy use his destroyers? Their big ships are no good! If they want to finish us, why don't they bring on their destroyers?"

As if to answer him, he saw. The *Minnesota* ran into an area where its smoke-screen had partly settled down and spread out. It was still not in view of the enemy capital ships. Only the fighting-tops and a quarter of the masts were clear. But the smoke-screen ended a half-mile away and the line of enemy destroyers were in full charge. Full speed ahead, bones in their teeth, straining every nerve for the velocity needed to make a success of their suicidal dash for the *Minnesota*. Twenty of them in a magnificent squadron plunging for the target of their fleet . . .

One of them rose and buckled as a thousand-pound bomb exploded in the sea in contact with its hull. The Army bombers were at work. A second lost its tail and came to a halt, spitting smoke and steam and bitterly despairing streams of anti-aircraft shells. A third ran into an aerial bomb and started a dive that ended on the bottom. The *Minnesota's* anti-torpedo battery exploded thunderously. Again. Again. Again . . . Six terrific volleys. Six destroyers died. The bombers got to work again on what were left . . . The smoke-screen heaved slowly upward and blotted out the view.

There were twenty square miles of smoke-screen for the *Minnesota* to play in now, and the Army held the air against the most desperate assaults of an enemy now in actually a desperate position. The American battleship was the most powerful battleship on earth—even on paper. She could range her shots and spot them through a smoke-screen that made her invisible to the enemy. The Army had held the air above her from the first. Now it was fighting for the air above the enemy. American air-bombs sank one enemy aircraft-carrier. A pocket-battleship's steering-gear was wrecked by a bombing squadron who went on about their other business and left a flight of torpedo-planes to finish her off. The enemy fleet was in exactly the position into which—with the assistance of American politicians—it had maneuvered the American battlefleet off Hungars' Bank. The *Minnesota* had control of the air and fought not only behind, but in a smoke-screen. The enemy ships were necessarily firing nearly at random, despite their enormous numerical superiority, while the *Minnesota* fired broadside after broadside with an uncanny accuracy. And its broadside was the heaviest afloat. In this action, because of the unhuman accuracy of its range-finder spotting, it secured a larger percentage of hits than any other vessel had ever made, in action or out of it.

"All they've got left—" panted the commander of the *Wasp*, "is subs!" He was hoarse, though he could never remember speaking a word, before, and much less shouting. "They've tried everything else. They'll try their subs now!"

MacReady's nose and ears were bleeding from concussion. His eyes were bloodshot and watering from the

same cause. He was gory and horrible to look at, but he grinned exultantly.

"The wind's blowing the smoke-screen southward at fourteen knots. We're moving with it. There's no sub on earth can travel fourteen knots submerged, and you can bet your other collar, old horse, that no sub's going to get to us on the surface!"

A faint howl came up from below. It sounded even above the tumult of explosions all about and the uproar of aircraft aloft. There was no fighting above the *Minnesota* now. The fighting was taking place above the enemy fleet. The howl came up again, thin and reedy but triumphant. MacReady recognized it. It was a simultaneous roar of pure delight from the officers and men of the *Minnesota*. And MacReady's earphones gave him the cause of it an instant later.

"The enemy has formed a smoke-screen for his own protection from our fire!"

And Lieutenant MacReady and the commander of the now-trisected *Wasp* arose and danced clumsily about the fighting-top of the *Minnesota* and shrieked themselves hoarse from pure joy.

Because, of course, if the *Minnesota's* range-finders could range and spot shells through a smoke-screen to direct her fire out of it, they could work through two to direct her fire into another. And the enemy's control of the air was gone forever, so his only possible hope would be to destroy the accuracy of the *Minnesota's* fire. It was incredible. It was impossible. But it was true.

So the action of the Ninth of August, 1934, more commonly known as the Battle of the California Coast, was completed with two vast blankets of blackness floating up sea. The *Min-*

nesota remained deep in one mass of impenetrable darkness, and her guns boomed and boomed and boomed, sending shells screaming to the targets futilely hiding in the heart of another darkness, or with even greater futility trying to flee.

The action had started at half-past six in the morning. At three in the afternoon—it was seven o'clock by Washington time—an official order reached the *Minnesota* by wireless and in the official naval code. There had been a stormy, a tumultuous session in Congress. The bombardment of Seattle had had the effect the enemy anticipated. Instead of two days of debate, a conclusion was reached in one. A resolution had been passed accepting the preliminary peace terms of the enemy. The President of the United States was commanded to issue the orders meeting the enemy's requirements for an armistice.

As commander-in-chief of the military and naval forces of the United States, he issued the historic order:

"To the Senior Officer Commanding American Vessels of War in the Pacific Ocean:

Immediately on receipt of order you will surrender all vessels under your command to the officer in command of the enemy battle fleet off our coasts."

And the captain of the *Minnesota* radioed his even more historic reply:

"To the President of the United States:

There is no longer an enemy battle fleet off our coasts. We have destroyed it."

As a matter of politics, the Battle of the California Coast had the extraordinary result of making pacifism no longer respectable. In any case, it immediately ceased to be a political issue, because Americans instantly backslid into patriotism. Our politicians, in the remaining three days before election, vied with each other in patriotic fervor. Where before they had competed for the noblest expres-

sions of resignation to the will of Providence, now they struggled to outdo each other in the ingenuity of the demands they proposed we should make upon the enemy, as the price of peace. And they were voted for on that basis.

But at any rate—until America forgets—the Army and the Navy are not toys for politicians any longer. They are in the hands of real men.

The End

THE LUNAR CHRYSALIS

RAYMOND GALLUN

Illustrated by MOREY

What would humanity do if faced with a world gone arid? In today's world of space exploration the answer seems obvious—find another planet! But for another race, on another smaller world, the solution was not so simple!

IT would be difficult for anyone to review the history of the tremendous events of the past fifty years without being impressed by the triviality of the causes which govern not merely the history of the earth but that of the universe. If a little device enclosed in a box occupying not more than a cubic foot of space had not failed to operate, it is probable that human beings would never have evolved upon this planet. Certainly they would never have become the dominant form of life here. If it had not been for the innocent meddlingness of a certain individual, the wonderful transformations which have taken place in our civilization and knowledge would almost certainly have been long delayed.

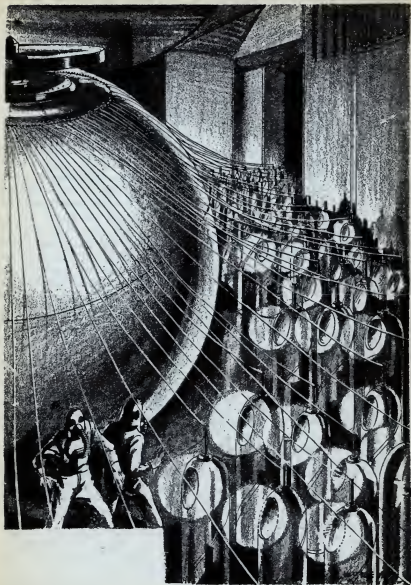
The story of the Lunar Chrysalis has been told many times. But some of my experiences, which I am recounting now, are new to the world. On the evening of August 29, 1951, I was aboard the first and last great-lunar rocket, *Black Meteor*, which was rising rapidly

above an Arizona desert, headed for the moon. My only companion was Professor George Paxton, noted astronomer and inventor, who, during my four years at college, had become a very dear friend of mine. Though he was past sixty and had spent most of his life studying things far above the comprehension of the average person, his youthful enthusiasm and energy made him no mean companion for me, who was then a lad of twenty-two.

The journey to the earth's satellite was a complete success. Except when we were accelerating or decelerating, we traveled with a fair degree of comfort. However, the heat from the rocket motors and the constant vibration, together with the smell of ozone, were not particularly pleasant.

So accurately had our craft been aimed, that during most of the trip we scarcely needed to touch the controls at all.

The majority of my time was spent examining the cryptic, buzzing machin-



cry of the strange vehicle in which I rode, and enjoying with Professor Paxton the wonders of space—the brilliant stars and the great black cavities of emptiness between them, the huge, blinding sun with its flaming corona, the shrinking earth, and finally, the mysterious moon, which hour by hour grew larger. Seen from our native planet, that moon was a beautiful, romantic sight, but when viewed at closer range its rough and jagged details stood out, and gave it a weird and terrifying aspect, which sent little shivers up and down my back. Yet it was a pleasant terror. I never regretted my decision to be one of the first men to visit Luna.

We headed straight for the crater Tycho, for here Professor Paxton believed that there were the remains of an ancient Lunar civilization.

The last few hours of our flight were indeed an exciting time. Both of us were in the control room which was located amidships. Television panels all about the walls gave us views of surrounding space in all directions. Anxiously we were watching one big panel. In it was pictured the glowing globe of the moon, which grew ever larger and larger. The rocket motors had been stopped for many hours, but still, urged on by the gravitational force of Luna, we were hurtling along at a constantly increasing speed.

Professor Paxton was glancing nervously from speed indicator to gravity detector, and from gravity detector to chronometer. Presently he turned a series of six big wheels one after another. Then he shifted a little, silvery lever from a vertical to a horizontal position. I felt the whole craft suddenly rotate in an alarming fashion, but it was all over in an instant. The flat base of the rocket was now toward the moon instead of its pointed nose.

It was time to apply the brakes, and the twelve stern rocket nozzles were ready to perform this duty.

Professor Paxton shifted another lever—this time an immense black one. A thunderous roaring, accompanied by a tooth-cracking vibration, set in; then an awful feeling of weight came to us. The jets of vapor ejected toward the moon were checking our fall.

For an hour our discomfort continued, during which time we could do nothing but lie on the soft swinging couches hanging along opposite walls of the narrow compartment. Even breathing was painful. The sternward view-panel showed the moon creeping gradually upward to meet us.

The uncomfortable feeling of heaviness caused by the rapid deceleration gradually decreased and then disappeared altogether. We were hanging motionless ten miles above the satellite, supported there by darting jets of flame coming from the rocket motors. Whirling gyroscopes were keeping the *Black Meteor* balanced in a vertical position.

The view-panel told us that directly below us was Tycho. It was dawn on that part of the lunar surface, and in consequence the sun was close to the horizon. Tycho's encircling ring of mountains cast an ebony shadow across its floor and made it look like a great lake of ink, or like some tremendous maw opened to swallow us.

My companion turned down the rocket motors a little, and we began to sink. Down, down we went. Now we were on the level with the mountain peaks, now we were in their shadow. Presently we landed with a slight jar on the surface of the moon!

Professor Paxton busied himself with the controls for a few seconds, and the roar of the rockets fell silent. The

screeching hum of the gyroscopes died out a moment later.

Hurriedly we climbed into our space armor. The heavy door, which resembled the breech of a big cannon, was opened, a ladder of steel cordage was let down and the professor, carrying the American flag, descended. I followed him closely.

Reverently we took possession of the moon in the name of our Mother Country and we planted the flag in the gray sand. Not until then did we begin to take stock of our surroundings. We were quite close to the western mountains; the sun was shining on them. They loomed upward, vast and majestic, as though they were meant to be the pillars of the sky. The rock from which they were formed was of varied, though somewhat subdued shades. Pale, ashy-gray predominated. Here and there were patches which, under the strong glare of the sun, were so nearly white that they looked like snow. There were a few scattered areas of black and dark red. The mountains were seamed with deep ridges in which shadows still lingered. Above the great range was the sky—dead black, except where the dazzling stars shone. I do not think that there was anything about the moon more terrifying and more conducive to utter loneliness than that horrible dead firmament. It was a fitting background for the complete desolation of the lunar landscape.

High above our heads was a gray-green crescent shining calmly among the stars. The sight of it, during the journey, had frequently made me feel, that after all, my adventure was only a dream or a hallucination. Now I wondered again how I could be way out here on this world of emptiness looking up at the warm, friendly earth that was my home. I could see the

eastern edge of North America, partially mist-veiled. It seemed too utterly fantastic to be true!

The sunlight reflected from the mountains lit up the floor of the crater dimly. Except for a few ridges and irregularities, it was very level. At the foot of the enclosing rampart many boulders were strewn. All about the ground was covered with what appeared to be very fine, gray sand. Far to the east we could see Tycho's farther wall, diminished in size, but perfectly clear-cut. The base of that wall was in deep shadow. At our backs, rearing up like a squat, thick tower, was the *Black Meteor*.

"So this is Luna," I said. "Rather impressive at close range, but so far she hasn't shown us any real surprises. We knew all about this before we came."

Professor Paxton scooped up a little handful of sand. "Don't be in such a hurry to be disappointed, son," he said. "I'll wager that there is something in this little bit of soil that will interest you immensely. Let's look."

We examined the sand together. My companion let most of the loose dust slip through the fingers of his space gloves. The little remaining dust had a few small, frost-like crystals mixed with it.

"Congealed carbon dioxide," said the professor. "As was predicted, the moon now has a very rare atmosphere made up largely of that gas. It gets pretty cold here at night—probably not so far above absolute zero. In consequence, some of the atmosphere freezes and forms a sort of hoar frost, which melts again when the sun shines."

"Very interesting," I said, "but you told me all that when you lectured at the University of Wisconsin. Come on, you were talking about something really

interesting." As a matter of fact I was bluffing my *Nil admirari* attitude. As though anybody twenty-two years old and in perfect health could spend his first five minutes in Tycho and not be fascinated by everything he saw!

"All right, Jerry my boy," said the professor. "Here is the first mild surprise." He shook the remainder of the dust from his hand and then held out a little triangular piece of transparent substance. It was flat on both sides and looked exactly like a bit of broken window pane.

I stared at the thing for a second. "Well, I'll be hanged," I exploded. "You're not by any chance trying to prove that this desolate old wreck of a world was once inhabited, are you?"

Paxton shook his head gravely. "No, facts are what we are after—just facts. Remember, we're scientists."

I had knelt down in the sand and was scratching around with all the diligence of an industrious squirrel. After a few moments I unearthed another much larger piece of glass. I held it out to Paxton. "Here is another item for your bag of facts, professor," I said. "Better pack it carefully away with moth balls or salt it down or something."

"None of your sass, stripling," replied my companion good-naturedly. He was on his knees beside me now. Presently he let loose with a wild war whoop and leaped to his feet with such suddenness that he went fully three yards into the air. You know, of course, that the lunar force of gravity is only one-sixth that of the earth. When he was back on solid ground, he cried, "Look at this, Jerry, and then try to deny that the moon was once the abode of life!"

The thing he was holding toward me was a small piece of what looked like

very old wood. I took it from him and scrutinized it carefully for a moment. It was cylindrical, and had a pithy central core with a hard shell around it. From its mid-portion a sort of twisted tendril branched out. I realized immediately that the thing might have been buried there in the sand for many ages, for on the waterless, airless moon, decay is necessarily a very slow process.

"Seems to be the goods, professor," I said.

The latter was now all excited activity. He was pointing to a long shallow ditch which ran a perfectly straight course toward the center of the crater's floor and disappeared from view in the deep shadows. Its nearest point was about twenty yards from us. "There is other evidence in favor of my theory—an irrigation trench, certainly."

We went over to the thing and found out that it was artificially constructed. It was uniformly about ten feet across, and we could see that its bottom was made of a black stone-like substance which showed no indication of any crevices where it may have been jointed together.

We saw several long thin rods of this same black material stuck vertically in the ground. Some of them were as much as ten feet high, and had little round discs at their tops. Others were bent over and warped or broken. Paxton noticed that some of these rods were fixed so as to form the corners of squares—evidently there was some system to their arrangement. Then he began to scoop in the sand with a tiny trench spade, which was a part of the equipment we carried. I assisted him. We freed a couple of square yards of ground of the dust that had covered it. That fine powder was fairly loaded with fragments of glass and pieces of the black rods together

with stalks of an ancient vegetation.

"What do you make of it all, prof." I asked.

"Quite clear, I think, son," he replied. "When this world was getting old, and its air and water were almost gone, the clever Lunarians conceived the idea of making a big hot-bed or greenhouse out of this crater floor. They set these black posts all over and put a roof of quartz glass on top of them. The roof was probably airtight, and prevented the evaporation of the precious water into space. Then, too, it imprisoned atmosphere enough to make possible the growing of plants. It also protected them from cold during the long nights."

"Good reasoning, prof., but where did these hypothetical Lunarians of yours live?" I asked.

"Well, I'm not absolutely sure, but I think that they lived deep underground. As the air and water slowly disappeared, and the climate became rigorous, the intelligent inhabitants would naturally retire to the protection of buried caverns. The entrance to these caverns should be somewhere in the neighborhood. We will certainly find it eventually."

We spent the next few hours wandering about the western portion of the crater's floor. We went up along the foot of the mountain range and out toward the center of the great bowl-like depression. Everywhere was the wreckage of the lunar irrigation system. Slowly the sun crept higher and began to light up the ground all about us.

After a time we made our way back to the *Black Meteor*. Paxton prepared an excellent meal of ham and eggs, which we both enjoyed immensely.

Then I climbed the long spiral stairway to the pinnacle of the rocket a hundred and fifty feet above the ground.

Here was a small chamber roofed with a dome made of a tough, unbreakable, and perfectly transparent substance, which had been specially prepared for the purpose. In the center of the room was a telescope. I took my place at the eyepiece, and began to scrutinize carefully Tycho's walled plain which spread far to the east. Slowly I drew the objective lens along the crater's northern wall. Sand, rocks, and boulders in the far distance became like things in the immediate foreground. Everything was as clear as crystal, for there was no fog or haze to obstruct my view.

Presently something odd caught my eye. It was a big, black kopje or little hill of very peculiar form, which lay some little distance out in the valley. The sun was already shining on it, and I could see that it was highly polished, judging from the highlights that flashed from it. It was roughly square, and on each of its four sides, or rather on each of the three that I could see, was carved the head of some dreadful lunar monster. The mouths of the heads were widely distended. The queer block of black stone was crowned by a thin needle-like spire that rose all of two hundred feet above the rest of the structure.

I searched Tycho's floor with the telescope, rather hurriedly I admit, for the next five minutes or so; but I saw nothing more that was of interest. I came back to the rock of the Four Faces, and then called Professor Paxton, who was down below, packing away the specimens and relics he had collected.

When he had stared into the eyepiece for thirty seconds, he was all aflutter. "Gosh, Jerry, this is something! Get into your space armor and then let's pick up some supplies and be on our way quick!"

Well, you can guess that I didn't waste much time in following Paxton's suggestion, and for all his years he wasn't slow either. We saw that the air-purifiers connected with our oxygen helmets were ready for twelve days of service without further attention, packed up some concentrated rations, a supply of water, our space-tent, a camera and various other things needed for exploration. Then we started out.

I believe that it will be well for me to give a brief description of our space-tent here, for this piece of equipment was certainly sufficiently novel. It was a tiny light-weight shelter, made of a cold-resisting, rubber-like material supported on a metal framework. It was absolutely airtight and its walls were built to resist normal earthly atmospheric pressure. Eating and drinking were impossible, of course, when we were incased in our space-armor, and so when mealtime came around, while we were away from the rocket, it was necessary for us to put up our tent remove our heavy impedimenta. That tent looked mightly serviceable even though we never got a chance to use it. Why a fellow could even enjoy a quiet smoke inside of it! It rolled up into a compact little bundle that was easy to carry.

The distance between the *Black Meteor* and the rock of the Four Faces was about seven miles. We made it in good time, moving at a dog trot most of the way. But now and then we leaped along covering twenty-five or thirty feet at each bound. Considering that things of equal mass weigh six times as much on the earth as they do on the moon, the weight of each of us, including our space-armor and equipment, represented about fifty-five pounds.

Only once we paused, and then for just a minute or two. The sun was already shining on a portion of the crater's floor. In a little depression, or hollow in the glowing sand, we found a cluster of tiny lichen-like plants. They were gray-green in color. Their leaf-like whorls, which clung close to the ground, seemed perfectly dry, but still we knew by their fresh appearance that they were living. Somewhere in that deep lunar valley there was still a trace of water.

"Plenty of time to study present-day lunar plants after we have visited the Four Faces," said Paxton.

Presently we were climbing the gentle slope of the knoll, on which was perched the queer relic of the civilization of the ancient Moon Men. I felt oddly like a poor victim being led to the flaming maw of some heathen idol.

We circled the structure so that we might see all sides of it. It was about fifty feet square and, neglecting the spire, about equally high. The four heads with their gaping mouths were all identical. They represented the head of a creature which seemed to be part feline and part reptile. The fanged jaws, the wicked, slanting eyes, and the little triangular ears were cat-like; but the fine scales that covered the forehead and neck were unquestionably reptilian.

We found that the mouth of each creature was a door which led into the interior of the rock. With a feeling that was very close to awe, we entered one of the weird portals. The central chamber was circular, and except for a sort of ledge or walk running all around its walls it was floorless. In place of the floor, there was a great circular pit. Eagerly we peered over the railing which surrounded the hole. From far below a faint radiance seeped upward,

lighting the walls of the immense excavation dimly. We could see that there was a road or runway spiralling down around the sides of the pit. It terminated on the side of the well opposite us.

"The plot thickens, professor, but the Fates point the way toward the solution of this mystery. "Come," I said.

We walked around to the other side of the pit to a place where the roadway began, and started down it. A layer of fine dust covered the runway. The fact that it was perfectly smooth and undisturbed heightened our belief that it had not been used for many ages.

Every now and then, as we spiralled downward, we came opposite a large circular door in the walls of the well. Each was closed by a big metal portal.

"Well, Jerry, here's our moon city. Just as I expected—entirely under the ground. The doors probably lead into the streets. We'll blast through just as soon as we can. Everything should be perfectly intact—the buildings, the machinery, even the dead Lunarians themselves. Talk about digging up Maya cities and Pharaoh's tombs! Mighty little stuff compared to this!"

At last, after a long climb, we came to the bottom of the well. Like the walls, it was covered with a black cement. At some time there must have been a rather violent moonquake in the vicinity, for the floor of the pit was veined with many deep cracks. At its center there was a trap door which had probably been closed at one time, but which had been burst open by the quake. Part of its frame had broken away, and it dangled down on its hinges into whatever chamber or room lay below. That room was brilliantly illuminated, seemingly by some artificial means. Incautiously, the professor and I knelt down beside the open

trap door. We took just one look below, and then everything under us gave way. Amid fragments of broken stone we both tumbled to the sand-covered floor fifty feet below. The distance was the equivalent of only about eight feet on earth; in consequence neither of us sustained any injury.

Paxton looked ruefully up at the big gaping hole in the ceiling. "I hope this room has another exit, Jerry, because if it hasn't, we're going to have to work pretty hard to get out of here. Let's look about a bit first, though."

The chamber in which we found ourselves was certainly a huge one. We were standing near the northern wall, and could get an excellent view of it. It was circular and must have been at least two hundred yards in diameter. It was roofed by an immense, white, stone rotunda, at the center of which was a big crystal globe, which gave a brilliant but not dazzling light.

Almost the entire floor space was occupied by a weird outlay of apparatus, the purpose of which we were then unable to determine. In the middle of the pavement, a black hemisphere bulged up at least forty feet. On its top was poised a heavy metal disc, which looked like a huge horizontal fly-wheel. From this machine scores of small pipes and heavy cables branched out, after the fashion of the radial strands of a spider's web. Each of the pipes was connected with the tops of a long row of queer torpedo-shaped bottles of tarnished metal. These bottles were little taller than a man. Each had what appeared to be a little circular door in one side of it, near the top. I estimated that there were about ten thousand of these bottles in the room.

Everything in the vault was covered with a layer of fine dust, which showed

plainly that no living creature had invaded the place for a long time. Unfortunately Paxton's hoped-for "other exit" was nowhere in evidence. The principal task of the moment was to find some means of escape from the trap we had so awkwardly fallen into. Hence we didn't have much time to devote to more interesting things. Since I was younger and more agile, the job was left mostly to me, and a most disgusting job it was! First I threw aside every piece of impedimenta I didn't need, and going back a ways from beneath the hole in the ceiling I got a running start and tried to jump for it. Well, I didn't go up much more than half way. I tried again several times with no better results. Then I took a long steel cord from my pack and made a lasso of it. Again and again I hurled the noose up through the opening in the hope that it would get caught on something and provide a means of escape, but no such luck.

There were three circular doors, similar to those along the spiral runway, set in the walls of the chamber. It was the professor's suggestion that we try to blast through one of these, and seek a way to freedom in that direction. We were carrying a small quantity of corlissite with us. Well, we did attack one of the doors, but after a long interval of boring with the small but effective drills we carried, and frequent blasts, we gave up. Our explosive was exhausted. The metal of the door was the toughest I had ever seen and the stone around the frame was only a trifle weaker.

Only one more chance remained. We would have to collect everything in the room that we could move and make a pile of it under the opening in the roof. Then perhaps we could scramble up and regain the runway. But there wasn't

any hurry about it. It would be twelve earthly days before the Lunar sunset. We had food and water for the length of time, and our air-purifiers could be relied upon to supply us with oxygen. Right now we were badly in need of sleep. For two days before we landed on the moon, we hadn't slept, nor had we indulged in a nap since.

Each of us kicked a little pile of sand together for himself and lay down in it.

Just before I began to doze, a thought struck me: "Funny, how that big light up there can burn so brilliantly when it hasn't had any attention for goodness knows how long," I said.

"Yes, it does seem queer to us, but you must remember that at the time they became extinct the Lunarians were scientifically probably far in advance of presentday human knowledge," replied my companion. "The functioning of their machines must have been almost completely automatic. They were so perfect that they needed practically no attention. Doubtless there are many Lunarian machines still in existence which need only the touch of some living hand to set them to work."

In a minute we must have both been sound asleep.

I awoke at last with a feeling that I had just had a wilk' nightmare. What my imaginary adventure had been, I had even then forgotten; but I still had a vague sense of terror. The last words of Professor Paxton, spoken just before we had gone to sleep, somehow haunted me. What if the big, engine-like device in the room was still in a condition to operate? Supposing I should attempt to start it? The idea captured my fancy immediately. I glanced toward the still slumbering Paxton. Needn't bother to awaken him.

I proceeded down an aisle between

two rows of metal gas tanks toward the center of the room, where the machine squatted. I walked around the hemispherical thing once to see just what it was like. I had never ventured that close to it before, for I had been too much occupied with other things. There was no way to determine the principle of the enigmatic mechanism, for its working parts were all covered. Only the great disc at its top, and the hundreds of cables which radiated out in all directions, showed. A little stairway ran up one side of the hemisphere to a small platform. With the zest of the explorer hot within me, I climbed it.

Set in the side of the machine was a black box about ten inches square. On top of it was a small lever which swung in a plane parallel to the upper surface of the box. Engraved in the metal along the arc in which the tip of the lever would evidently move, was a series of spaced marks, like the figures on any kind of meter or dial.

The lever was the only bit of ornamentation, which the colossal mechanism boasted. It was made of some yellow metal, probably gold. Its handle was the head of some repulsive lunar creature which resembled an octopus more than anything else I could think of. The head had a really striking resemblance to a human skull. The tentacles of the thing were wrapt spirally around the lower part of the lever.

Should I tamper with the great machine? Would there be any danger of disastrous consequences? Would it by any chance explode? Would it give off strange and deadly rays? I hesitated. Essayists have written on the topic of my hesitation at that moment, for unknowingly I was then the possessor of greater power than was possessed by any human ruler or dictator that ever

lived. With one movement of my hand I could change the destinies of two worlds.

My curiosity decided for me. The chances were that nothing would happen regardless of what I did. I grasped the gleaming golden handle, and tested it to see if it was movable. There evidently was a spring connected with it, for at my first touch it leaped over toward the right end of the scale above which it was poised.

The first indication that anything had resulted from my act was a slight vibration of the platform beneath my feet. Then I looked up. The flywheel was beginning to turn. It was going more and more rapidly every instant! Within a quarter of a minute it had settled down to an even speed of rotation.

What was happening now? What was going to happen? My nerves were jumpy and I had a vague feeling of panic.

I hurried down the stairs and over to where Paxton was sleeping. A lusty shove aroused him. "I've started it, prof.!" I yelled—"The big engines!" and I pointed toward the center of the room. It was a little time before the sleep cleared from his brain sufficiently so that he could understand what I was talking about.

We went over toward the silently working apparatus, and stood before it watching.

I was becoming distinctly nervous. "Do you know, professor," I said at last, "something is telling me that in a little while this is going to be a rather unhealthy place for us to be. That machine is ages old and its parts probably aren't as strong as they once were. Supposing the forces acting inside of it should get out of control? They might blow us to pieces!"

"Bosh, Jerry," he replied. "Don't be an old woman." But I somehow felt that he, too, was a little uneasy.

Presently it occurred to me that I might try to shut the thing off. When I reached the platform, I found that as far as my puny efforts were concerned, the switch was absolutely immovable.

For what must have been nearly an hour the wheel rotated steadily, and then the Lunar Chrysalis burst its shell. The little doors in the sides of every one of the thousands of metal bottles suddenly clicked open. Paxton had been looking down one of the aisles of dully glowing capsules, and had seen it happen. His eyes fairly bulged from his head.

"Jerry! Look!" he cried.

A violet glow was coming from each of the openings. For what seemed eternity itself, we watched, glued to our tracks, too panic-stricken to move a muscle. I was staring at the open door in one of the metal bottles, which was only a couple of paces from me.

Presently the end of a thin tentacle, tinted like mother-of-pearl, coiled itself delicately over the rim of the opening. Another followed, and then I saw a pair of antennae-like things, which supported on their tips little lavender globes that must have been eyes. They wavered and oscillated back and forth hypnotically. With slow deliberation the thing hoisted itself to the opening in its metal cocoon and squeezed through it. Lightly it lowered itself to the ground, and then, in an unhurried fashion, it proceeded to look me over.

Except for its antennae, which swayed continually, it stood perfectly still. Sons of Satan! Was there ever such a gorgeous and yet hideous creature! It had all the glory and wonderful coloring of a tropic butterfly, magnified to

unclearly proportions, and yet about it, with its scores of whip-like tentacles, there was something alien and snake-like, which provoked a shudder. A blue halo which intensified the weirdness of its appearance surrounded it. The Lunarian stood in a semierect position, and was about as tall as a man. It had no head as far as I could see. The top of its body was covered with a shiny brown shell, which looked like the calyx of an immense inverted flower. From beneath this shell a sort of mantle projected. It was wonderfully colored in orange and blue and red arranged in artistic designs. It seemed to me then to be a real part of the creature and not an artificial adornment, and I later found that this was true. The antennae, or eyes, as well as the tactile tentacles coiled out from the spaces between the sections of the calyx-like shell. A dozen or so of short thick appendages at the lower end of its body served it as legs.

And now I was conscious of other eyes upon me. A curious groping tentacle was reaching around from behind me to the glazed front of my oxygen helmet. On the point of shrieking, I turned about, and then I saw rank upon rank of the Lunarians, each enveloped in his glowing nimbus. We were completely surrounded.

"What kind of a mess have we gotten ourselves into now, Professor?" I cried.

"I don't know," he answered, "but anyway, keep cool. Things won't go wrong then I'm sure. Just do what they want you to, and try to be agreeable. We'll get out of this all right."

There was a Lunarian on either side of me grasping my arms. The professor was being treated in a similar manner. Someone had opened one of the big metal doors in the wall, and Luna-

rians in groups of three were entering it. Guided by our escorts, Paxton and I fell in behind the rest.

We were moving down a broad, lofty corridor. Illuminating globes, similar to the one in the chamber of the machine, were set at equal intervals along the roof. The light was reflected many times from the polished granite walls and pavement, and it glinted richly on the little golden pillars, which lined the buried roadway at regular intervals. Each pillar supported on its top a sphere of rosy crystal. I could never then have tried to suggest that those immense globes were really rubies. Ornately carved doors were set between the pillars. We were walking down a street lined with lunar residences.

The passageway was nearly a mile in length. At last our fantastic procession debouched into a chamber of simply colossal proportions. Its floor seemed to be oval or circular, and its roof swept up into a huge dome. An azure glow, exactly duplicating the sky of a bright earthly day, came from the ceiling. There was a big artificial sun, too, which poured down its hot rays from the center of the dome. In ages past the floor of the chamber must have been a splendid park with green trees, lakes and streams, and fairy-like pavilions. The pavilions and dry beds of lakes still remained, and the trees, too, but the latter were crumbling dead mummies devoid of life.

The army of the Moon Men, with us in its midst, entered the park and proceeded along the white highways to its center. Here was the dry bottom of a pond. Beside the pond two big pipes rose upward. Each was fitted with a valve.

Breaking ranks the Lunarians hurried toward the valves and scrambled over them. In a moment a geyser of

sparkling water shot ceiling-ward from one of the pipes and began to flood the lake bed. What was coming out of the second pipe I could not at first guess, but when I heard a deep-toned roar which rapidly increased in volume, I knew. The Lunar city was being flooded with air. I looked at the aneroid barometer strapped about my wrist. The pressure was mounting rapidly.

With the coming of the atmosphere, a strange thing happened to the Lunarians. The lavender flame, which had enveloped each of them disappeared. I concluded, that in the absence of oxygen, this mantle of light must in some way supply them with the life-giving vapor.

For several hours we wandered about the gardens with the thronging Lunarians. Our escort led us a short distance to a small, ornately carved building of some bright green material. Its doors swung open to receive us as if some invisible doorman tended them, and when the professor and I had passed inside they swung gently to. The short hairs on the back of my neck showed a decided tendency to stand on end.

We looked at those two folding portals. They were of silvery metal, ornately tooled. No latch or knob was visible, and when I pushed against them they showed every indication of being locked. But maybe this was only because we did not understand their mechanism.

A little exploring told us that we were quartered in the most gloriously beautiful suite of rooms we could wish for. There was a big living room, the walls of which were veiled with dark purple hangings. There was a bedroom with two odd beds in it. Each was

suspended from the ceiling by four heavy chains of some metal which may have been silver. A door led from this room into an alcove, in the floor of which there was an oval basin—obviously a bath. Besides, there was a room with many odd instruments and devices in it.

The pressure of the air about us was a trifle less than half normal earthly pressure, and so we decided to try discarding our heavy space armor. The atmosphere of the moon was evidently highly oxygenated, and so we found it perfectly breathable.

Freed from our cumbersome attire, we proceeded to make ourselves comfortable. We lighted cigarettes and sat down on the soft divans in the living room. I had leaned back languidly, and had just begun to make myself perfectly at home when I heard a whirling sound, and then the hangings beside one of the crystal-glazed windows parted. A silvery sphere with several tenacular arms floated into our presence. A hoarse ejaculation of surprise escaped the professor's lips. In an unhurried, methodical fashion the globe, unsupported by any visible means, glided into the room. Several moments later we heard a gushing of water. During the next few minutes we both enjoyed a hot, perfumed bath prepared and supervised by our mechanical servant. The thing dried us by means of a blast of warm air blown from a sort of register in the wall.

When we returned from our ablutions, a tempting meal had been set out for us on the floor of the living room. There were two metal platters, each of which bore a lump of something, which looked and tasted like highly seasoned meat. We found it very palatable. No forks were supplied, but fingers served very well in

a pinch. We weren't particular. Besides, there was a bowl of delicious fruit of several different kinds. And a flagon of water, which had a sharp, invigorating taste. Evidently some stimulating substance had been dissolved in it.

For a time after the meal we talked, trying to straighten out the strange events of the past few hours, but nothing came of it.

"I guess we had better wait and see, Jerry. Frankly I am bewildered," said Paxton.

Presently we went into the bedroom, undressed and wrapped ourselves in silky blankets which our mechanical servant had prepared for us. I, for one, was quickly asleep.

A bizarre little melody produced by a system of gongs, concealed somewhere in the wall, aroused us. We enjoyed a delicious meal of fruits brought by the automation, and then visitors arrived—two Lunarians who had evidently been given the task of entertaining and instructing us. They led us out into the park and down a long, curving highway.

The lunar city again throbbed with life. Vast machines, invisible to us, were filling the air with whirling. Gaudily marked inhabitants were moving about industriously, evidently

Following a throng of Moon Men, we entered a circular building, which appeared to be a depot of some kind. Scores of cone-shaped cars were moving slowly along grooved tracks set in the floor. Guided by our escorts, we climbed into one of these and took our places in seats along the wall. Except for the driver, who stood before the control board in the nose of the car, and the two Lunarians, who served as our guides, or jailers, we were alone.

One of our escorts made a sign to

the pilot by waving a tentacle, and then we began to gain momentum rapidly. Through the windows we could see the black opening of a tunnel yawning to receive us. The car shot into it. An illumination globe over our heads gave us light. We were pressed back in our seats by the terrific acceleration. The air in the tunnel, torn by the awful speed of our vehicle, first whistled and then shrieked like a tortured devil. But it lasted for only a few seconds. We glided out into a depot, which may have been many miles from the one we had just left.

Our guides ushered us through an arched doorway out into the open. We were in another immense cavern, but it was not so richly ornamented as the one we had just quitted. It had been built for utility rather than for beauty. The arching roof was of bare concrete, and it was studded with numerous small illumination globes, instead of being lighted by a single large one.

The bright light glinted up on rows of colossal, silvery forms, which stood in cradles of web-like metal scaffolding. Hundreds of automatons, directed by a few Lunarians, were swarming over them. Just what they were doing, I was, at the moment, quite unable to tell.

Steering us by gently tapping us on our shoulders with their tentacles, our escorts guided us down on aisle between two rows of gleaming shapes. We craned our necks upward. Never have I felt so tiny in my life as I did that day, when I stood beneath those towering masses of metal. We paused beside one of them. It was formed something like a boat—its length must have been a thousand feet and its height nearly a hundred.

"Those things are obviously craft of some kind," said Paxton. "But what do you suppose can be their purpose?"

I was looking at the short cylinders which protruded at regular intervals along the side of the hull and far above our heads. They suggested something sinister.

"It seems as though there is a big war going on somewhere," I said, "and may the Fates help the foe that faces this fleet! There must be at least a thousand ships in this hangar."

A big cylindrical drum was being rolled by a spider-legged automaton up alongside the vessel. Presently the mechanical creature halted and turned the drum up on end without any apparent effort. Even on the moon it must have weighed many thousands of pounds. Using a wrench-like claw, which was a normal part of his anatomy, he unscrewed the cap at the cylinder's top and attached to the opening a flexible pipe, which dangled over the side of the vessel. A throbbing sound, like that of a pump in operation, set in.

"Fueling!" said the professor excitedly. "Getting ready for a trip of some kind!"

Other robots were bringing more drums.

We followed our guides down toward the bow of the vessel until we came to a door in the huge hull. A gangplank led up to it. Signs were made which clearly indicated that we were to climb the gangplank. The interior of the ship was brilliantly lighted. The metal floor was lined with rows of tall tanks, connected with one another by means of cables in much the same way that a group of electric dry-cells are joined.

We wandered over the entire craft, inspecting this, that, and everything. Few things we understood, but everywhere we found evidences of a science infinitely in advance of our own.

About us were the silently working

automatons, polishing, oiling, inspecting. Inhumanly, they never glanced up to look at us, and their masters, living, but equally inhuman, paid absolutely no attention to us.

It was with a feeling of relief that I finally entered a car in the depot, and hurtled away from that gigantic, buried cavern, filled with its slumbering giants.

Our guardians left us at the door of the building in which we had been quartered. When we had entered our living room we found a Moon Man seated on a divan, awaiting us. His wavering stalk-like eyes turned about to glance in our direction. Then a dozen or so of his tentacles grasped small levers on the key-board of a rectangular mechanism, which stood on a low stand before him. He manipulated several of the levers, and in unison with his movements a familiar group of English words came to our ears:

"Hello, fellows! Fine day, isn't it?"

The voice had a flat, mechanical quality devoid of all emotion; nevertheless, we were very pleasantly surprised. Perhaps I should say that we were very pleasantly dumbfounded, for that was truly the case.

When I had regained the use of my tongue, I replied: "Greetings, Mr. Lunarian, you look like an agent. What have you for sale—airplanes, or is it radio-vision instruments?"

But the Moon Man had evidently reached the limit of his understanding of earthly humor, or perhaps he was pressed for time.

"I am Number 333," he said. "The Council has sent me to clear up certain things concerning our race, which have evidently been puzzling you very much. Number 503 and Number 8974 have been studying your minds carefully since the Awakening. Your mental vi-

brations have been recorded by means of a device which is concealed in the ceiling of this room. The information thus obtained has been very interesting; especially were we interested by your peculiar sound language. Several of us, including myself, have mastered it, but since we have no natural organs with which to produce such sounds it was necessary for me to invent the machine which I am now operating. Since it was hastily designed and constructed, it naturally has its faults; but if you will overlook these faults I am sure that it can do much toward clearing up the mysteries which have been troubling you.

"The history of my people begins countless ages before there were any living things on earth. Because of its much smaller size, and consequent greater radiating surface in proportion to its bulk, the moon cooled down from a molten state long before your planet. There was plentiful sunlight, atmosphere, and water. Conditions were ideal for life, and so nature, with its inevitable and inexplicable alchemy, proceeded to produce life. It began in the tepid seas, and then gradually spread over the adjoining plains, which became vast stretches of woodland, teeming with various species of animals.

"These creatures were continually in competition with one another. Realizing that the time was short, nature quickly selected one, which, because of its intelligence and hardiness, seemed best fitted to survive.

"These ancestors of mine were quite similar to me in appearance; they had the same tentacles, and the same multi-colored mantles, and, next to their intelligence, the most important characteristic—a sort of hard shell, in which they could seal themselves up during

the nights, which were already very cold.

"By the time the ancient Lunarians had discovered the use of fire, the moon must have begun to show signs of age. The numerous volcanoes which had formerly replenished the constantly leaking atmosphere by a steady flow of carbonic acid gas, were dying out one by one. In consequence, the air became rapidly rarer. The ability of a planet to retain its gaseous envelope depends on its gravitational force. Lunar gravity is too weak to prevent the air from floating off into space in a short time.

"Like oxygen and nitrogen, water vapor also leaked away, and the oceans began to shrink. Thirsty deserts began to creep down into the lowlands.

"Meanwhile, the terrific tidal drag of the earth was stopping the rotation of Luna on its axis. The drying ocean beds, under the glaring sun, which lingered longer and longer in the heavens, became during the day veritable furnaces of heat. The long nights were terrifically cold.

"My ancestors inhabited a section of territory on the side of the moon now invisible from the earth. It was a wild country, cut up by high rocky ridges and deep valleys. Everywhere were those huge, sleepy lava-pits which seldom erupted, but which always poured forth clouds of smoke and vapor. All about lay impassable deserts and high mountain ranges beyond which no Moon Man had ever dared to venture.

"The earliest knowledge of mechanics and science, which the early Lunarians gained, was acquired through the practice of irrigation. Water from the melting snows on the mountain summits was collected in reservoirs, and

pumped into ditches which conveyed it to the growing plants.

"The danger of over-population was offset by almost constant warfare between the various tribes. Walled cities were built in strategic positions. Protected by the ramparts of those cities, the more intelligent of our race were given sufficient leisure to devote themselves to science and art. Metals came into extensive use, and mechanics developed. The crystal-clear nights gave splendid opportunities to the astronomer. The stars were mapped and studied and the relationship of our planet to the earth, still a glowing mass of lava, was determined.

"All went fairly well until a short time after the moon had ceased to rotate on its axis relative to its primary. In rapid succession the volcanoes all about us became extinct. The tidal pull of the earth must have been shifting the molten core of the moon away from these vents. The atmosphere, which had hung like a vast cloud over our homeland, began to rarefy. The water, relieved of much of the pressure of the air, quickly evaporated. Crops became inadequate, and the desert took possession of much of the arable land.

"For a hundred years or so the Moon Men led a semi-nomadic existence. The population, which had numbered about four hundred thousand souls, dwindled rapidly.

"Driven by sheer desperation, the survivors of the various tribes banded together and prepared to migrate. They packed up their scanty food supply, a few masterpieces of art and literature, and some scientific instruments. Then they started out into the untracked desert, which lay to the southwest.

"The ancient historians have vividly portrayed the events of the Great Migration. There were a few power-

driven automatons in the van, but, owing to the scarcity of oil fuel, the inhabitants carried most of their supplies on their backs, or slung in litter-like contrivances.

"Across blazing, sun-lit plains that parched the skin, up high mountain slopes and down into deep valleys, the questing caravan moved, and always along the way it left the carcasses of its dead. Some tumbled to destruction from the summits of jagged ridges and thousands died of hunger and thirst. In the lowlands, which had been sea bottoms, the air was thin but breathable, but on the higher plateaus it was frequently so rarefied that the gasping lungs of many of the weaker individuals gave up the fight, and the unfortunate creatures collapsed in their tracks. Not daring to help their fallen comrades, the others pressed on.

"When night came the weary wanderers incased themselves in their cold-resisting shells and burrowed into the deep sand.

"Sometimes, so the historians say, just at dusk, they would see queer purple and red sheets of flame flashing over the plains—obviously phenomena of the rarefied air similar to your northern lights. Only they were close to the ground.

"When the sun rose again, a single Moon Man, piloting a crude, bat-like flying machine, which had recently been invented, would swoop upward on flapping wings and take a look at the surrounding country in search of the best course for the caravan to follow. During the day the flier made frequent trips aloft. Throughout their wanderings my ancestors took this ornithopter with them, slung in a sort of cradle, which required a hundred pilgrims to carry. It proved to be of inestimable help, and probably was the

means of saving the race from extinction. When the scanty supply of oil for its motor had been used up, they supplied it with fuel by frying down the bodies of their dead in an improvised sun-furnace.

"At length, after the caravan had dwindled to twenty-five thousand, the Lunarians climbed the range of mountains and came out on an area of typical lunar country, with scattered volcanoes and long chalky rills. Those rills were the white rays of Tycho, still many miles away.

"The Lunarians followed one of the rays, and as they progressed they became more and more hopeful. The atmosphere was growing rapidly denser. At comparatively frequent intervals they came upon clusters of cactus-like plants, which had been very rare elsewhere. These plants held stores of water in the cavities of their pulpy leaves, and besides, in an emergency, they could be eaten. My ancestors ate them, just as in a famine-ridden country, starving men of your own earth have often eaten grass.

"The arrival of the pilgrims at the brink of the Promised Land has been written about and painted countless times during the golden age of our history. All through the long, hot afternoon, the wanderers had been struggling up the eastern slopes of Tycho; but in spite of their weariness their hearts were singing. At least they were not gasping for breath, and besides, they were in the pleasant shade of the mountains. Beyond the rampart they felt certain was a place where with diligent effort they could win a chance to live.

"Just at sunset the first of the van reached the summit of the barrier, and then they saw what the pilot of the flying machine had seen hours before.

Deep down in the immense depression, where the shadows were deepening, was a glassy little lake that reflected the blue sky. Beside it was a jungle of vegetation. A faint breeze blew over the rim of the crater. Somewhere down there there were vents which were pouring forth volumes of air, steadily replenishing the dense cloud of life-giving vapor which hung over the surrounding territory.

"The lunar night was half gone before the remaining ten thousand wanderers could descend, with the aid of metal cables, to the floor of Tycho. Their eagerness prevented them from waiting until dawn. The blanket of air retained the sun's heat sufficiently so that there was no danger of anyone freezing to death—a thing which most certainly would have happened on the almost airless plains.

"Everyone had a drink of the water of the lake, and then the contented pilgrims buried themselves in the sand and slept. When the next day came, they began to lay out the plans for their new city.

"Thus dawned the era of the greatest prosperity that the moon has yet seen. The floor of Tycho, as well as the surrounding territory, was fairly well suited for a hardy form of life, and so the Moon Men proceeded to convert this new land into a great garden.

"For fifty thousand years the Lunarians, aided by their evergrowing knowledge, lived in perfect comfort. Not only did their science become more extensive, but their minds grew increasingly keen until feats of memory and reasoning, which would have been completely impossible in former ages, were accomplished with ease.

"But always hostile nature fought against them with ever-increasing cun-

ning. The gases which poured out of vents in the floor of Tycho became less and less in volume. As a result, the atmosphere rapidly rarefied. Similarly, the water was vanishing, and thus the area of land that could be irrigated decreased. The cultivated fields were roofed over to keep in the warmth and to lessen the leakage of air and moisture into space. The city now consisted of an immense labyrinth of underground passages and chambers, which could be hermetically sealed from the out-of-doors.

"Something would have to be done soon to alleviate the situation, or else the whole race would become extinct. There were ways of checking the leakage of the vital elements, but there was no means of absolutely preventing it.

"For a long time before I was born, astronomers had been looking hopefully toward the earth. In some distant day that still dully glowing sphere of hardening lava would cool sufficiently so that we could establish ourselves there. But before the coming of that time the moon would be only a dead cinder of a world, devoid of all life except, perhaps, a few of the simplest forms of vegetation.

"It was I, Number 333, who solved our greatest problem. We are naturally a hibernating race. Why not sleep until the great planet, which shone so brilliantly in the night sky, would be ready to receive us?

"After a long period of experimentation I discovered two gases. One, when taken into the lungs, produced complete suspension of animation. Under its influence, any living thing could sleep for ages, without any decay of its body tissues. The other was an active stimulant capable of arousing a subject from that sleep.

"The rest was easy. A thousand

space-ships were built to carry us and our equipment to earth, when the time came. Each of the ships was heavily armed, for we feared that when we migrated there would be flying monsters similar to those which once inhabited the moon on the larger planet. All the water and air we could collect was imprisoned in underground reservoirs. Food was stored and the seeds of plants, preserved by the sleep-producing gas, were packed safely away.

"The great machine, which you found in the chamber at the bottom of the well, was constructed. It is nothing more than a pump, to force the anaesthetic to the steel cocoons, to draw it off again at the end of a certain period, and then to force the reviving vapor to the sleepers.

"At length all was ready. We shut the airtight gates of the city and descended to the chamber of the pump. Calmly each of us crept into the cocoon which had been assigned to him by number. The doors clicked shut and the machine, actuated by an automatic device, began working.

"I recall clearly the last moments of my wakefulness before the long sleep. I was resting on the upholstery inside the metal bottle. Above me a faint light sifted in through the glass door. Presently I smelled an overpowering sweetness, like the perfume of a certain purple flower which, in the moon's youth, used to grow with such profusion along the edges of the lunar seas. My consciousness wavered; the last thought that passed through my brain before I slept was whether the time-clock connected with the starting mechanism of the pump would set the machine in motion at the end of two hundred and fifty million years.

"'Of course it will,' I said to my-

self. 'It is too simply and perfectly constructed to do otherwise.'

"The ages passed like an instant. We awoke; a hasty study of the thoughts in your mind, and of the existing terrestrial and lunar conditions told us that the time-clock had failed, and that we had slept many millions of years longer than we had planned. We are deeply grateful to Mr. Gerold Olson for throwing the switch that freed us, even though he did it unintentionally."

The monotonous voice coming from the box ceased. A door opened and two Lunarians entered. There was an exchange of tentacular signs between Number 333 and the new arrivals. Then the voice began again:

"Gentlemen," it said, "Number 6042 and Number 9435 have orders to take you up into the crater immediately. The space ships are to be given a test flight, and it has been decided that you are to see it. Don your space armor. When you return I shall tell you more."

A tunnel-car carried us in a few seconds to the sunlit plain within Tycho's ramparts. We emerged through an opening in the ground, which the Lunarians seemed to have just freed from the accumulated dust and debris.

Our guides were beside us. They were again enveloped in their protecting auras of blue light. We were standing on the brink of a great rectangular opening which yawned at our feet. We peered downward. In contrast to the intense glare of the sun the glow of the bottom seemed like semi-darkness.

Far below I saw moving patches of light and the sheen of something big and gleaming.

We had been looking silently below for some time when suddenly a dazzling yellow ray came into being. Then a mighty bulk shot up from the depths

with such speed that it was far over our heads before we saw what it was. A space ship! The hole before us was a huge door in the roof of the chamber that housed the Lunarian interplanetary vessels. Another craft whisked up past us, and then at timed intervals of about ten seconds they continued to come.

The first twenty formed a "V," and then, propelled by yellow rays projected from nozzle-like devices at their sterns, they rushed toward the western wall of the crater. Long before they reached them a great section of the encircling mountains before them vanished, blasted into nothing by some unguessable magic of science.

I can imagine how I looked then—eyes bulging and ghastly pale. I turned toward Paxton, and then for a time we stared at one another both frozen into cat-like crouches of complete terror. The ships continued to shoot up past us and to conduct their aerial circus far over our heads—wheeling, darting, and driving.

"Did you see that, Jerry?" gasped the professor. "And they're going to earth; they planned it maybe three hundred million years ago. They'll smash us—our cities, our works of art, our knowledge—everything. Maybe they'll wipe the whole race out of existence! Those weapons, my God! But the human race will fight! See, there is the *Black Meteor* only half a mile away. If we can get to it, we'll go back and give our people a warning. By God, we'll do it! Come on, lad!"

We turned about, and adopting the most rapid means of locomotion on the moon—for a man on foot—jumping—we began to move rapidly toward the conical black tower which was our space ship.

Our guides leaped after us for a short

distance and then gave up the pursuit. Why they did so I was then quite unable to guess, for they covered the ground fully as rapidly as we did.

We entered the *Black Meteor* and climbed to the control room. If the Lunarians had ever invaded the ship, they had apparently not disturbed anything.

With frantic haste the professor tugged at the starting lever. The rocket motors roared into life. We were shooting upward at a terrific rate. The awful pressure of acceleration made it almost impossible to breathe.

Anxiously we watched the viewplates for the expected pursuit, but it did not come. The ships of the Moon Men continued to whirl and maneuver within the ramparts of Tycho, rapidly dropping away beneath us. In a few moments those ships had so diminished in size that they looked like silvery beetles crawling about on the ground.

As soon as the *Black Meteor* was under way Paxton went to the radio room and gave his warning. "Hello, Earth!" he called, "Paxton of the Moon Rocket speaking. The Lunarians are coming with a thousand armed space ships. Prepare for war!"

Throughout the homeward voyage, I navigated and guided our vessel without any assistance from my companion. He spent all his time in the radio room, talking with terrestrial stations, and in consequence very few words passed between us.

The sight of the vast Lunarian battle fleet, and the realization that humanity was facing a greater and more bizarre danger than it had ever faced before seemed to have numbed my mind. I did not know what to think. In a vague sort of way I felt that it was odd that the Lunarians had treated us so well. Were they not our enemies?

But why try to explain the actions of a people so totally alien? After all, were they so alien? Earthmen ordinarily treat their prisoners of war with consideration. Personally, I had sensed behind the mechanical voice of the Lunarian, who had related to us the history of the moon, a kindly something which might easily respond to friendship.

When we landed on the earth we found it in a whirling turmoil of activity. Paxton's story had been pretty generally accepted as truth. Astronomers had seen queer things happening in Tycho. They certainly could not believe that we were responsible for the vanishing of a quarter of its wall in an instant!

The armies of the world were being mobilized. Hundreds of thousands of planes were being concentrated near the great cities; ready for action. There were swift pursuit ships capable of speeds in excess of five hundred miles an hour. They carried those wicked little machine guns which fired bullets as fine as needles but impregnated with a poison that meant instant death. There were giant bombers—veritable battleships of the air. Besides, there were millions of commercial ships which had been commandeered and equipped to meet the enemy. The united armadas of the earth seemed like a force of unlimited power, but when I remembered the shining bulks, which had rushed through the lunar skies armed with weapons that dissolved mountains like a mist, it paled into pitiful insignificance.

For nine days after our arrival the earth watched, like a defiant beast, fortifying itself as best it could. Then one night, a swarm of tiny specks began to trail out of the moon like hornets coming from a glowing hornet's

nest. Just before dawn the next day, they shot into the terrestrial atmosphere over central North America. So great was their speed that they left trains of fire behind them like falling meteors.

During the interplanetary journey, the observatories kept the various air fleets constantly posted as to the position of the Lunarians. It was possible to tell about where they would enter our atmosphere, and so when they arrived fully a million fighting planes had collected from all over the United States to meet them.

They were lined up in orderly rows on the great Hinton Flying Field located about seventy-five miles west of Milwaukee. Others were constantly coming in.

For hours during the night the pilots had stood close beside their machines. A few carried on conversations consisting for the most part of a few monosyllabic words with one another. But nearly everyone maintained a tense and expectant silence. I was among the rest.

When the first dim glow of morning was welling into the east, two hours before the Lunarian fleet streaked into the earthly air, a siren began to hoot weirdly. Its far-reaching call could be heard for miles around. Time to take off!

With the calmness of one resigned to his fate, I climbed into the cockpit of my trim little craft. I closed an electric switch on the instrument board. There was a loud report, and then my Diesel motor roared into action. There were other reports coming from down the field—so many that it sounded like a sham battle. And the thrumming of warming motors grew ever greater in volume.

For a minute I busied myself with my equipment—my safety belt, my oxygen mask, my heavy electrically-heated gloves, my little devil-riveter of a machine gun. Yes, all was ready. I tested the controls—O. K. Then the siren blew two short blasts. Take to the air!

In rows of a thousand abreast, at timed intervals, the planes rolled down the field and slipped into the sky toward the east. I was among the first to leave.

According to the plan which had been worked out by our best aerial tacticians, each group of a thousand was to act as a military unit, and was to attempt to bring down an enemy battleship.

Once in the air, each squadron formed into a compact "V," and then began to climb. And, oh, what a climb it was! Up, up, up, into the icy air until it seemed that the gates of the Empyrean must be ready to receive us.

Thirty thousand, thirty-five thousand, thirty-eight thousand feet we ascended, and there we began to cruise. All eyes were on the squadron commander's plane flying at the apex of the "V." Presently a puff of gray smoke appeared above it. At the signal, each man catapulted a small grenade above him by means of a sort of spring-gun. Those grenades exploded, and formed a dense protecting layer of smoke, that looked like natural clouds, over our heads. The other squadrons behind us hid themselves in a similar fashion.

We wheeled and circled about, close under the vapor shield, waiting for developments. Our squadron was now above the city of Milwaukee beside Lake Michigan, which spread out like a gray picture of calmness in the gray

dawn. Nature apparently cared nothing for the fate of man.

A bright silvery streak in the east where the stars were fading. Another and another; then five or six all at once. The Moon Men had come! They were entering the atmosphere at a point over the lake about twenty-five miles distant from us.

A faint wind was blowing our cloud toward the northeast. We followed it. This was favorable to us, for now Milwaukee would not be in any danger of receiving any damage from our bombs.

As I wheeled and banked my plane, I studied the enemy fleet through my binoculars. I could see the long string of lighted portholes along the side of each vessel. What foolishness was this? Why did they expose themselves so boldly in enemy territory? And then for a moment, I felt with a touch of bitterness, that they realized that we were powerless to harm them. But I quickly checked the thought. It seemed traitorous and cowardly.

The battleships which had entered the earth's gaseous envelope were moving at a snail's pace toward us. The light of the sun, not yet visible to us, struck the polished metal of the craft still out in space, and made them glow like a string of glorious stars.

A little nervously we waited. Had the Moon Men discovered us? It seemed hardly likely. In the faint half-light, hidden as we were close beneath the smoke clouds, there seemed but slight likelihood that we had been seen. The droning of our motors was drowned by the louder roar of the propelling mechanisms of the mooncraft.

The enemy fleet crept on toward us. The ships were moving in a long column, four abreast. They were at a somewhat lower level than we were.

Like a shadow our entire force zoomed upwards through the smoke screen. Cautiously we scattered more grenades.

Though, under all ordinary circumstances, we were now perfectly invisible to our foes, we could still see them clearly through the vapor with the aid of the Richter Ray attachments on our binoculars. The Richter Ray, as everybody knows, resembles the x-ray in its powers of penetration and its ability to produce fluorescence, but it is vastly superior to the x-ray in that it can be focused and thus can produce real pictures instead of mere shadows.

An observer on one of those opposing vessels would have seen only a majestic bank of what appeared to be thunder clouds, dull gray like tarnished silver, unless the Lunarians possessed devices similar to our ray binoculars. I sincerely hoped that they had never heard of the Richter Ray.

Our foes were coming closer. Now a group of four battleships, the leaders of the van, were passing directly under the cloud which our squadron had formed. An involuntary thrill came over me, as I realized how majestic and wonderful they were. Around each huge hull was a faint halo. Those halos looked like the frost rainbows which sometimes appear in the upper air. But that was impossible, for there was no sun.

How easy to blast those giants out of existence with our bombs! We were waiting for Lieutenant Stanton, the squadron commander, to discharge a blue rocket—the signal which meant action. But he was not in a hurry. The Lunarians seemed to be still ignorant of our presence. Let the squadrons behind us take care of the first four. We would pick other victims.

Suddenly it occurred to me that it

was queer to the point of ridiculousness that such highly intelligent foes were blundering into such a trap!

Another group of four passed under us, and another and another. I watched Stanton's bomber, wheeling and circling almost a thousand feet from me; still there was no sign. But when the next group glided under our bomb-racks, he made up his mind. Certainly, the apparently stupid Moon Men must have discovered us by now! Our cloud had grown thin in spots!

A purple tongue of light leaped up from the bomber. What luck! Four in the bag! Bombs were falling like rain. In a couple of seconds a shower of metal scraps would be all that would be left of the great ships. And then, as I looked down at our victims, I saw something odd. My bombs were hurtling straight toward the deck of the craft below, but as they approached their target, they swerved aside, pushed by some strange force, and continued to tumble down toward the surface of the lake. The halos were protecting the battleships!

A feeling of bitterness came over me. What chance had we against these demons who could make our every weapon useless? Presently their rays would sweep up at us, and a few minutes later earth's last hope of salvation would be destroyed as completely as if it had never existed. But the instinct of self-preservation demands that every creature should die, trying to save itself. *We must fight! We would fight!*

I pulled my joystick sharply back and gunned my motor. As I zoomed upward, I saw that a number of other pilots were doing the same, I intended to dive down upon one of the Lunar battleships from a greater altitude, meanwhile spraying it with machine gun bullets. I continued to climb

vertically for about a thousand feet, then I turned the plane quickly over on its back and started down. Our cloud was thinning rapidly. My machine gun had begun to hum like a low-pitched tuning fork, but if the tiny pellets had penetrated the force shield of the battleship and had done any damage to the automatons that swarmed its decks, there was no evidence of it.

Hundreds of machine guns were buzzing now, the air was filled with the din of bursting shells, and bombs were still dropping. But behind their thick walls of force, the Moon Men were as safe as though a million miles separated us from them. They made no move against us.

I had dropped eight hundred feet, and was preparing to climb again, when I heard a sound coming up from below where the Lunar craft were gathering. It was deep and sonorous, and powerful enough to be heard above the noise of the battle. Could it be true? A voice? Yes, it was true! Something down there was speaking English words, and what it said made me wonder for a moment if I were not really dreaming.

"Cease firing, Earth Men," it boomed. "The People of the Moon come in peace. We only wish to ask a favor. Grant us the privilege of taking a small portion of your atmosphere and water back to our world, so that we shall be able to make life bearable there. Our payment will be great. We shall teach you the secrets of our vessels and our rays, we shall open for you, doors giving access to knowledge, of the existence of which you have never dreamed. We shall check those forces, which, if left unhindered, would eventually make your world uninhabitable. Besides, we shall always try to be your friends and guides. Will you agree?"

The mechanical voice died away, and with it the pounding of shells and hum of machine guns.

The first feeling which came over me was one of mingled consternation and relief. We had expected the complete destruction of our civilization and perhaps our race as well; yet these supposed blood-thirsty Moon Men were making an offer, which would mean nothing but good for us. Then suddenly I began to suspect that we were being tricked. There must be a catch somewhere! Fairness with creatures of lesser knowledge and civilization has seldom been the way with men.

The Voice spoke again: "The thoughts of many of you indicate that you doubt the honesty of our purpose. Very well. We shall stop the generators, which maintain our protecting force-shields. Then we shall proceed under guard to your flying field. Since you will be directly over us, it will be a small matter for you to destroy us, should we show any indication of breaking faith. We trust you."

And so our suspicions were allayed. If the Lunarians desired to conquer us, there was certainly no reason why they should make this move.

The little radio-buzzer over my ear was ticking out a command in code: "Feather-formation over Lunar fleet—head back toward Hinton Field—"

Thus our bloodless encounter came to its glorious end. Within fifteen minutes the world had heard about it, and had begun its orgy of celebration. Two hours later the governments of every important nation had agreed to the proposition of the Moon Men.

It was nearly noon before all of the craft of the two great fleets were landed at the Flying Field. About us, kept back by ropes, and by the diligent ef-

forts on the part of the police, was a vast crowd of spectators.

In the company of Professor Paxton, who had come by fast rocket plane from the observatory at Flagstaff, I wandered among the towering rows of ships that lined the field. About us were the Lunarians and their busy automotons.

Presently we met Number 333, recognizable by the peculiar green markings on his mantle. He knew us as soon as he saw us. "Greetings, Friends!" were his first words. I knew at once that he carried a much improved speech mechanism, for his voice, which came from a tiny box at his side, had lost its flatness. How he operated the device; I could not tell.

"There seems to have been a slight misunderstanding between us," he continued. "Your departure from our world was rather sudden. If you had waited long enough for me to tell you more, I think you would have been reassured."

Professor Paxton and I made profuse and somewhat sheepish apologies for our blunder. Then we asked the Moon Man to tell us more about his people's plans. Just what would they do now that the human race was in possession of the earth?

"When we saw that this planet was already inhabited by an intelligent form of life, we were rather puzzled as to what move to make," said Number 333. "Of course, we might have landed in the south polar regions, and started to rebuild our civilization there without disturbing anyone very much. But such a procedure has certain drawbacks, the greatest of which is that for a large portion of the year our sun motors would not be able to operate.

"It is to Number 2434 that we owe the solution of our problem. Three

days ago, he invented a peculiar form of generator which has the power to 'crystallize' the ether of space about the machine for a distance proportionate to the amount of energy being consumed.

"Crystallized ether has been known for many ages. It is an electrical phenomenon and can be brought into being by means of certain electromagnetic vibrations. You saw today what it was like, for we surrounded all our battleships with a protecting shield of it. It has many of the properties of normal matter, including solidity, or semi-solidity; but it lacks mass.

"It was not until Number 2434 invented his generator that we could produce a large enough volume of crystallized ether for the purpose we had in mind. But now everything is easy. We plan to form a vast, spherical shell all around the moon, and about a hundred miles above its surface. For this purpose, two big generators will be constructed. A few minutes after they are set in operation, the shell will be formed. If we desire it to disappear for any reason, it will be only necessary to shut off the power. Beneath the shield we will seal our borrowed atmosphere forever, against leakage into space. Thus the moon will become habitable again.

"Part of the payment for the gifts you Earth Men give us will be a similar, though necessarily much larger, shield around the earth."

Number 333 took us on a tour of exploration through the Lunar camp, and then at Paxton's suggestion, we decided to introduce our weird companion to the mysteries of earthly life. We all climbed into the cabin of the professor's plane, and a moment later

we were rolling down the field and into the air, all our fears gone.

Some minutes later we rented a mon-o-car at one of Chicago's landing stages; then we plunged into the whirling activity of the city, magnified many times by the titanic celebration that was in progress. Though he gave no sign that I could interpret, I am quite sure that Number 333 was somewhat more than a little bewildered. The flashing lights along Michigan Avenue, the din, the crowds of people thrown into a kind of ecstasy by the tremendous events of the day, and finally, the vastness of the city, with its seemingly endless avenues, were so totally different from the silent majesty of the moon, that I do not see how it could have been otherwise.

Nor was I any less affected. How was it possible for me, Jerry Olson, to be riding in this perfectly prosaic little vehicle, with a weird creature from another world as a companion? Such things didn't happen even in nightmares!

The Day of the Arrival is now fifty-three years in the past. Things have happened, just as Number 333 said they would. Tonight, as I look out of my window, I see the moon rising over the maple trees. The sky everywhere has a pale, greenish tinge, which dims the stars a little, and the moon has a green halo. The shields of crystallized ether are faintly phosphorescent at night. Earth has become almost a paradise. From pole to pole a balmy, spring-time climate prevails, for the

heat of the sun, once transmitted to our planet, cannot escape rapidly through the shield.

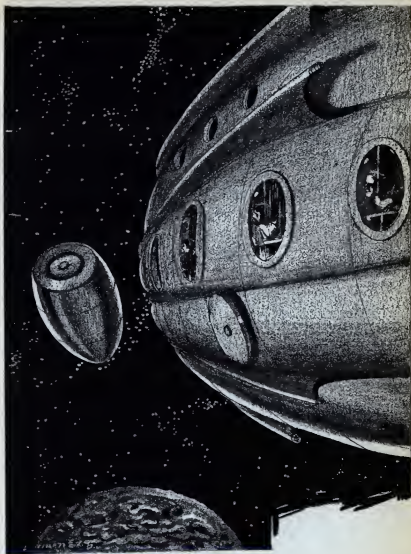
And Luna! Her day is now only forty hours long, for her people have found a way to increase her rate of rotation. The air and water carried from our planet in hollow spheres of crystallized ether have rapidly transformed her into a fairyland of growing things. Bizarre and beautiful plants have formed thick carpets of vegetation over those portions of her surface which are still uninhabited. The walls of many of her craters are already festooned with green vines to their very summits. Many of the hitherto desolate plains have become rich farmlands. The population of the moon has doubled and is increasing rapidly.

Between earth and its satellite a lively commerce is being carried on. Huge interplanetary liners, as well as many freighters, are constantly plying back and forth. Every winter thousands of earthly tourists flock to the Lunar cities to admire their lacy architecture, and to enjoy themselves along the seashores and on the steep mountain slopes.

My youngest son, Dan, is leaving for the satellite tomorrow for he plans to study there, in the House of Learning. He is a medical student. Number 333 will be one of his instructors.

But it is still impossible for an earthly human being to tell what greater wonders are yet to come forth from the Lunar Chrysalis.

The End



THIA OF THE DRYLANDS

by HARL VINCENT

Illustrated by MOREY

*It seems to us more and more logical to believe that any achievement which the mind can conceive of can eventually be attained, and perhaps for that reason, if for no other, interplanetary travel moves ever closer to the realm of possibilities. Even if such a seeming miracle should be performed within the lifetime of some of us, we should probably gasp at the risk the first experimenters take and immediately assume a casual acceptance of the wonder. Still, there will undoubtedly be a world of possibilities of adventure for many, many years after interplanetary travel becomes an established fact.**

*This is the original blurb used when "Thia" was first published.—Ed.

"IS that final, Mr. Sykes?"

"It is, Barron. Sorry, but I can say no more—we've done all we can. You're just out of luck, I'm afraid." The president of Interplanetary Lines, Incorporated, could not meet the gaze of the tall young man who faced him across his polished mahogany desk.

Cliff Barron's white lips set in a tight, grim line, and fire flashed from his shadowed eyes. He was sick, very sick, and disabled besides. Broke. Let down by the employers he had served honestly and faithfully for more than

ten years. Hopeless of the future.

"It's rotten, Mr. Sykes," he husked, "I wouldn't have believed it of Interplan—I—I—"

Scathing words of denunciation died in his throat. Leonard Sykes had turned to his papers and his pudgy finger was on the pearl button that would summon his secretary. The interview was ended.

Curbing his wrath and disappointment, Cliff rushed from the office and through the long main aisle of the repair shop where the slender shapes of several ether-ships rested in their cra-

dles. Out into the open air and stumbling across the landing field, his paralyzed arms dangling woodenly at his side and the clawed fingers, that once had been so sure and strong, resisting stiffly and without sensation the effort of his will that should have clenched them into hard fists.

Dazedly he wandered over the field to the small pavilion where visitors gathered on exhibition days. The place was deserted and he sank to a seat on one of the stone benches.

After a hideous pain-fraught moment he raised his eyes to where one of the small passenger-carrying ether-ships was taxiing to position for a takeoff. It was the J-18! His own ship—the one he had last piloted. The one in which he had been stricken with this terrible thing that had made of him a useless, pitiful wreck.

There was the raucous shriek of a siren and the J-18 took to the air like a frightened bird. Climbing steadily under the tremendous lift of her helicopter screws, the little vessel was quickly lost in the low-flung clouds over the Long Island field. For a time Cliff could hear the pulsing throb of the motors used in atmospheric flying. Growing ever fainter, it was. And then even that sound had trailed off into the gloomy silence.

The gray of the skies flashed brightly crimson; dulled again, and there was a second flash, less brilliant than the first. And now the heavens were rent by the hoarse scream of the vessel's rocket tubes. Ear-splitting that first blast, giving rise to thunderous protestations of the riven air more than a mile above. The second discharge came as a faintly derisive echo of the first, and following long after. Many miles up there in the stratosphere by

this time, the J-18 was plunging into space with the ever increasing speed of full acceleration. If only Cliff were able to be in that pilot's seat!

He groaned aloud and, swinging his useless arms like pendulum, beat the knotted hands frantically against the stone bench. A voice laughed crazily in the stillness of the deepening twilight; his own voice, cracked and unreal. Realizing then, that he was on the verge of complete breakdown, Cliff Barron fought desperately back to sanity.

But returning calmness of mind brought increased bitterness and intensifying hatred of Leonard Sykes. True, the corporation had paid most of Cliff's hospital expenses and had provided for him the best medical attention available. But they had left him in this condition to shift for himself, disabled for life—miserably. And the one chance he had for complete recovery had been denied him by Leonard Sykes, the hard-boiled financier, whose coffers Cliff had helped to fill. Denied for no good reason at all that Cliff could see—Sykes had refused to discuss it almost; had offered no explanation . . .

A crunching footstep roused Cliff from his wrathful thoughts and he looked up to see a stranger approaching him. Not entirely a stranger, he saw on closer inspection, but a man he had met or seen somewhere. A man big in stature and of confident bearing.

"Your name is Baron, isn't it?" he asked, addressing Cliff.

"That's right."

"Mine's Vetter—Carl Vetter. You may remember me as one of the passengers of the J-18 on the last trip you made as her pilot."

"Oh, yes." Cliff did remember; the

man had been there, when the strange Martian fever laid him low.

"I've been interested in your case," Vetter went on as Cliff rose from his hard seat, "and perhaps I can help you. You'll not take offense if I ask you to talk it over with me?"

Wild hope surged through the young pilot's being. "Why—why no, Mr. Vetter. I don't know how to tell you—I—"

"Good," brusquely, "That's fine. Come along with me to New York. My autogiro is over here and we can be in my apartment in no time at all. Talking will be easier there."

The big man turned swiftly from Cliff's stammered protestations of gratitude and strode across the field toward the private hangars. The young pilot stumbled after him, torn by doubts and hopes. It was too much to believe—but at least it was a chance to talk with some one who was willing to listen. Someone whose every action betokened sympathetic understanding.

A little later they sat in Vetter's luxurious Park Avenue apartment, having covered the ninety miles to New York in less than a half hour of the man's skillful piloting. Vetter, though bearing the air of a man of means and influence, was an adept at handling the little ship of the lower air levels.

"No doubt you are surprised at my approaching you this way," Cliff's host began. "But you'll understand when I've finished. Really, I have selfish reasons—several of them—and I'm going to offer you a job you may not accept."

Cliff hadn't expected this. "A—a job!" he stammered. "What sort of a job can I hold—now?" Awkwardly but significantly, he swung one of his dangling arms, and a slow flush crept into

his hollow cheeks. Was Vetter making sport of him?

"I mean it, Barron. This is a job you can take and can do well, if you'll accept it. Anxious to visit Mars, aren't you? Risapar, to be exact?"

"Yes, yes. How did you know?" Cliff half rose from his chair.

"I told you I had been interested in your case—I've been doing a bit of inquiring. Will you talk freely of what happened today in Leonard Sykes' office?"

Cliff's anger flamed. "Are you his friend?" he demanded.

"An acquaintance only—formerly a business associate. You need have no fear of speaking out—"

"I haven't. Listen, Mr. Vetter, I'm not quite thirty years old, but I've piloted etherships for Sykes more than ten years. Piloted with the best of them, and helped earn him a huge fortune. I contracted this Martian disease on one of his ships, as you know, and I claim he owes it to me to see me out of the—the results—if it is at all possible. Doesn't he owe it to me?"

Cliff's voice rose on the last and he stared hard at his host.

Vetter nodded slowly. There was pity in his friendly gaze and something of Cliff's own rising anger. "I certainly think so," he agreed feelingly. "Do you mean to say he refused you passage to Risapar—that he refused to do anything further in your behalf?"

"He did just that, the swine! When I was discharged from the hospital they told me I had only one hope—to see the great surgeon Lintarg of Risapar. He, they said, might restore my strength. My arms—my hands that are . . . as you see them . . ." Cliff swung the useless members hopelessly.

"And you told this to Sykes?" Vetter urged gently.

"Sure I told him—told him everything. Begged him; asked him for passage to Risapar, for a loan to pay Lintarg's fee. Told him I'd work it out when I recovered. And I know I would recover—I know it! But what did Sykes care? I've salvaged more than a million for him in one trip, Mr. Vetter, and he had the nerve to turn me down. Can you beat it?"

"No, I can't." Vetter was obviously much moved by the recital. "Didn't he explain his refusal in any way, Barron?"

"No. Just sat there tight-mouthed, looking out of the window. Said he was sorry. Sorry—good God!" Cliff looked down at the talons that were his hands, shuddering.

His host arose and stood over him, resting a hand on his shoulder. "It's a shame, Barron," he said feelingly, "and I can't say I blame you for feeling this way. It's difficult to excuse him—"

"Excuse him! I'd like to see him in my place—done for—maimed as I am maimed. I wish—" Cliff choked, and his wasted face was contorted with hatred as he raised it to Vetter.

"Just so, Barron—I can appreciate your bitterness. And really, what you have told me makes things a little easier—about this job I want you to take, I mean."

Cliff recovered his poise. "What's that got to do with the job?" he inquired blankly.

"I'll explain." Vetter drew his own chair close and resumed his seat. He then launched forth in rapid speech.

"This action of Sykes and your feeling toward him does make a difference," he said. "At least I feel it will make a difference with you. Because,

Barron, my project is one that is in direct competition with Interplanetary; it will undoubtedly bring about the financial ruin of Leonard Sykes if it is successful. And if you accept this job you will be working against Sykes. See what I mean?"

"See! I'll say I do!" hissed the young pilot. "Nothing would suit me better."

"I have obtained control," his host continued, "of a new means of traversing space that will render obsolete the present rocket-ships. The vast investment in Interplanetary Lines and Sykes' control of it will become worthless. His ships will be so much scrap—that is a foregone conclusion. But more important to you, I know, is that you will have the chance you long for—you will go to Lintarg for this treatment which can cure you. And your name will go down in history, besides, as the—"

"How? Tell me?" Cliff's cheeks burned; he was fevered with excitement.

"—as the first man to cross space by the new method. Instead of taking a journey of days to reach Mars, you will make the trip in less than an hour. Think of it! You will travel at a speed of twenty thousand miles a second. Safely. All mankind thereafter will traverse space at such speeds. Do you agree with me that it will mean the end of rocket-ship travel?"

"Lord yes, but how—"

"We will *shoot* you across space in a projectile-like car. Like being shot from a gun, excepting in this case the gun is a magnetic one and its barrel extends throughout the entire distance of the journey. It is a vast tube spanning the ether between two planets."

"What-a-at!" Cliff began to doubt his own ears.

"Just that. It's an invisible tube, of course, and is projected in much the same way as radio impulses are projected in a concentrated beam. A hollow cylinder of etheric vibrations is what it really is. The cylinder may be likened to the carrier beam used in radio, only the superimposed frequency serves an entirely different purpose. Instead of carrying voice or television impulses, the heterodyning frequency produces nodes of energy at regular intervals throughout the enormous length of the tube—magnetic fields of unbelievable power which draw the projectile-like car along within the tube with ever-increasing velocity. All controlled, of course, from transmitting and receiving stations located on the planets between which the car travels. Don't you see?—the regularly-spaced fields of magnetic force are energized in swift succession and the car, which is of magnetic material, is speeded through each in turn. Gathering momentum with each pull until—pfff!—it is beyond comprehension."

"I'll say it is!" The flush had left Cliff's cheeks. He was beginning to appreciate the seriousness of the matter. "And you want me to take the first trip in this—this bullet?" he asked.

"Exactly." Vetter rubbed the palms of his hands one over the other in nervous anxiety as to his guest's reception of the proposal. "And don't think I'm asking you to commit suicide, Barron. We have sent living creatures across to Mars—guinea pigs first, then a dog, and most recently a small pony. All arrived safely—quite unharmed. I swear it; I have proof. But to obtain adequate financial backing for the entire project I must have a *man*. Only by sending a human being across safely can I overcome the scerp-

ticism of the big men who are interested in the financing. And there must be secrecy until the project is well under way. Don't you see?—that is one of the reasons I chose you—Barron—"

"Yes, I see." Cliff rose jerkily and moved to the table where he stood with face averted, his dangling arms leaden at his sides.

Vetter maintained a discreet silence as his guest thought it out.

There would be a certain satisfaction to Cliff in obtaining some measure of revenge on Sykes in this manner. Certainly he had nothing but bitterness in him toward his former employer, nor would he feel any sympathy or regret if Vetter's scheme actually came to bring about the man's downfall. But this was relatively unimportant; his own idea of squaring the account was of something more personal. Once his vigor and the use of his arms and hands were restored he'd find a satisfactory way—more satisfactory than mere financial ruin for Sykes. He'd make him suffer physically—cruelly.

And he'd gloat as he did so.

Most important, though, was that he get to Lintarg. He *must* get to Lintarg. And Vetter's proposal was a possible means of attaining that end. A long chance, maybe, much longer than Vetter would have him believe. Perhaps they *had* sent dumb animals across the gulf of space in this crazy bullet-thing. But would the reaction of such tremendous acceleration be the same on humans? That was what Vetter had to prove to his backers, of course, and he hadn't been able to find a man willing to risk the trip.

For that reason he had taken advantage of Cliff's disability and despair to . . .

Well, suppose he had? Vetter was

sincere in his belief in this amazing contraption, and had been frank in divulging the details. If he was wrong, that trial trip meant death to the man who took it. Death. Cliff contemplated it in a new light. Rather have death than a life of this. Permanently disabled . . . he'd be a ward of the government; a derelict. Life? That meant activity to Cliff, the sort of activity he had always glorified in. Without the zest of that activity which had been his, he'd rather have the other—death . . . Oblivion . . . release . . .

"I'll do it, Mr. Vetter," he blurted, wheeling suddenly and facing Vetter.

"Good—good boy!" The big man thrust forth his hand, but let it fall swiftly when he saw the look of pain that flashed across the young pilot's drawn features.

"Sorry Barron," he mumbled apologetically, "I didn't think." Then brightening with excitement: "But you won't be sorry, boy.

"You'll have it all back; be shaking hands with me in a month.

"Come on, we'll arrange the details."

Twelve hours later they stepped from Vetter's plane to the flat top of a mesa in the Painted Desert of Arizona. A spot far off the regular air lanes—safe from prying eyes.

"You'll understand the need of secrecy," Vetter said when they entered a small building which topped a lift shaft that was bored into the solid rock of the mesa, "If Sykes learned of this he'd put his vast resources at work to head it off. His own vast investments at stake, he'd spare none of his influence or political power to squash the thing. Scientific progress and the benefit to mankind would mean nothing—you know that."

"Sure." Cliff Barron's thoughts were

upon the journey he was about to make; nothing else seemed important. A sick feeling came over him as the lift dropped into the darkness of the shaft.

In the hollowed-out heart of the mesa was massed a most amazing array of machinery. Cliff could only liken it to a huge power plant he had visited in 1997 when he was a fresh recruit of Interplanetary Lines. There were mighty generators here in the bowels of the mesa, generators driven by atomic engines whose fuel was common shale. Vetter told him that the atoms comprising this ordinary stone were disrupted in the retorts feeding the engines, and the enormous nuclear energy was thus liberated for use. Cheap and unlimited power. Huge coils of copper tubing surrounded the shiny projectile that was the space car, and great bus-bars connected these with the generators. This was the projector of the great invisible tube of space through which Cliff was to be hurled.

The blast of a whistle rose suddenly, shrilly. Men were running here and there, manipulating switches that started the main generators, operating controls that swung the giant coils and the space car itself around to a new angle. An observer was at the eyepiece of a great radio telescope signaling instructions.

"Just in time, Barron," said Vetter, "They are preparing for the trial. We are now facing toward Mars at the proper angle."

"I'm ready." Cliff's reply was in steady voice, but he was as a man in a trance, moving listlessly and dazedly toward the car.

On a platform beside the entrance manhole of the steel projectile stood a small group of men, whom Cliff took

to be the financiers or their agents, who were there to witness the start. The workmen in the great hidden laboratory, Cliff saw with surprise, were all blinded artisans or deaf mutes. But, of course, Vetter would employ such men in order to preserve secrecy the better.

They were inside the space car then, he and Vetter, and the older man was speaking rapidly of the appointments of the strange vehicle of the heavens. It was hollowly quiet in the heavily padded interior. Then Cliff heard the pumps of the oxygen-generating and carbon dioxide absorption apparatus. No propelling machinery was in the car; he well understood that he was to depend utterly on the ray-operators outside. If they made a mistake . . .

There were two compartments, one for freight and another for passengers. In the latter were about twenty deep-cushioned, spring-supported hammock berths. Vetter explained that these were to ease the pressure of acceleration and he assisted Cliff in disposing his body to best advantage in one of the comfortable berths. These swings were arranged so as to be reversible—at approximately mid-point of the journey they would swing around to take care of deceleration as well . . .

Vetter's voice droned on, but Cliff was listening to the pumps. He wanted to be off. The sooner the better.

A buzzer shrilled its wasp-like note.

"Three minutes now, old man," exclaimed Vetter. "I'll be leaving you soon. Here's your Martian letter of credit and a note to Lintarg. My men at the other end will take care of you. Good luck, now, and *au revoir*. See you in a few hours."

"Sure you will?" Cliff smiled; he was perfectly composed now that the time was at hand.

"Positive." Vetter grinned encouragingly and then was gone.

Cliff heard only the pumps and the jangling of the bolts as the circular cover of the outer hatch was bolted to its hermetically sealed seat. He was alone in this man-made contraption that was to bring him his chance of life . . . *real* life once more . . . or of death.

Time passed at a snail's pace as he waited. Funny, if Vetter was so positive, that he hadn't made the initial trip himself. Cliff set his lips in a bleak smile. They never took any chances with their own precious lives, these promoters. Nor did they find it easy to get others to do so for them. Only in Cliff's case it was different.

He thought of the things Vetter had told him. With Mars and Earth in their present relative positions, the distance between the two bodies was fifty-five million miles. And the trip was to require forty-five minutes!

The buzzer shrilled again. Sixty seconds to go, Vetter had told him, after that repeated signal. Cliff's heart was pounding so loudly he could hear its thuds. Unconsciously he was holding his breath and was counting off the seconds. And he had stiffened his body in anticipation of the shock that was to come.

This would not do. Vetter had warned him to relax completely so his body might better withstand the pressure. He relaxed.

Sudden terrific vibration gripped the car, causing the springs of the hammocks to resound noisily. Cliff was pressed into the cushions with tremendous force. The journey had begun.

It was incredible, impossible, that pressure which smashed him down. His body suddenly had acquired

enormous weight, the weight of a behemoth. It was as if the paralysis of his arms and hands had taken hold of his entire being. He couldn't move a muscle of his lower body or even turn his head.

And, second by second, the pressure increased until it seemed his bodily frame must give way under the strain. Breathing had become difficult, for the muscles of his lungs were overtaxed in expanding the unwanted weight of flesh and bone that covered them. His eyes burned in their sockets; his vision distorted. The weight of cornea and aqueous humour was depressing each lens so it no longer focused. And then, without warning, came oblivion. For Cliff Barron there was no further knowledge of the journey.

Faster and faster still the tiny space car drove on into the void, into the mysterious depths of the heavens towards Mars, where anxious observers awaited its coming.

Low voiced mumblings impressed themselves on Cliff's returning consciousness. Sharp questions in a querulous rasping tone, answers in whispered syllables of the dryland tongue of Mars. Cliff opened an eye experimentally and saw a squat bearded Martian conversing with a second one of greater stature and forbidding countenance. They stood but a few feet from the cot on which he lay in a dim-lit and unfamiliar room. Cliff closed the one eye as his own name was mentioned in the uncouth speech of the parched plains of the red planet.

"It is he—Cleef Barron—of the paralyzed arms. Even as the ethergram advised us. But Vetter must be mad; we can not let this one go to Lintarg. He knows too much—our plans would be ruined."

"Hush!" The other was speaking. "He is about to awaken. It is wonderful, Maranu—a complete vindication of Vetter's claims. If this man Barron had perfect health and strength, he would have come through conscious and entirely unharmed. Even as it is, he is little the worse for the experience. Think what it means."

"Surely I think. I know. But we must make away with him, I say; we must not heed Vetter's message. He is a sentimental fool. It is too dangerous that this one be permitted to live."

"Hush, I tell you—he awakens."

Cliff groaned and tossed, feigning a painful awakening. He had remembered the journey's start and Vetter's promises and was suddenly very much awake. If this was to be an argument as to his own life or death he wanted to take it standing. He dropped his legs over the edge of the cot and sat swaying weakly, though his head was now as clear as if he had just come out of a refreshing sleep.

"Where—where am I?" he stammered.

The one called Maranu grunted disgustedly as the other, the squat bearded one, thrust out his hand to help Cliff to his feet.

"You haff arrived safe in Risapar," the bearded one said in atrocious English. "No harm whateffer haff come to you. It iss—"

The big Martian Maranu shoved him roughly aside. "Enough!" he rasped in his own tongue. "It must be as I said. Durvil." His hand moved to the flame pistol at his belt.

"No!" The one called Durvil reddened angrily and pushed himself in front of Cliff. "No killing now. I tell you we—"

Maranu choked him off with a huge hand closing on his throat and Cliff looked blankly from one to the other as if in complete ignorance of the speech of the drylands.

A clamor rose outside the door; someone was shouting excitedly in the corridor. Maranu let loose his grip of Durvil's throat.

"They want to see him!" gasped the bearded one, "Maranu, you fool, they must see this man who has come across the void, else they will not believe. Are you mad?"

"True, we must show them," the big fellow agreed, "I shall wait."

Cliff would have welcomed any interruption at the moment. This byplay of the two Martians was puzzling; he could think of no reason why Maranu should want him out of the way. But he had no doubts as to the seriousness of the drylander's intent, nor would he have gambled any great amount on the value or permanence of Durvil's apparent friendliness to himself.

Maranu unlatched the door, grumbling, and there stood revealed in the hall an armed guard, a giant drylander who thrust his grimacing face into the room and jabbered unintelligently in the lowest dialect of his race. Durvil, the squat one, lunged toward the guard.

"Outside!" he bellowed as the fellow tried to shove his way into the room. "We will bring the traveler to the dome room. Report this to your captain—understand, scum?"

The big guard, a foot taller than the bearded one, cringed and withdrew. Cliff followed him in response to Durvil's imperious gesture of command, and the two he had first seen in this place brought up the rear. Durvil was berating Maranu in husky whispers as they passed along the corridor.

It was a queer reversal of the first order of things. Now it was apparent that Durvil was the higher in authority, though before the guard's coming Maranu had been the one to give orders. Cliff Barron knowing something of the strange temperament of the various races of Mars, was none the less puzzled.

They came out in a huge vaulted chamber that was quite like the one in the mesa of the Arizona desert. There were similar generators and the great copper coils of a projector of the hollow beam of ether vibrations. The space car itself rested on the receiving platform of the apparatus. It was from this place they had taken Cliff to the room where he returned to consciousness.

At the far end of the chamber was a group of Martians. Wondering, as he was led before them, Cliff saw that one was a woman. A strikingly beautiful woman, more like one from his own country, than like any he had ever seen in the drylands or canal cities of Mars. A woman of queenly bearing who sat on a cushioned and canopied couch surrounded by uniformed drylanders, and who stared at Cliff with the most remarkable of eyes. Wide-set eyes of lustrous jet in which a feral light glinted. Hypnotic eyes; compelling.

"It is the passenger, oh Thia," said Durvil, making obeisance.

"He is quite well and uninjured after the voyage?" The black eyes of this Thia showed no change of expression.

"Not well, of course—on account of his disability. But I can assure you, oh Thia, he has suffered no ill effect whatsoever due to the trip itself."

Durvil's voice was respectful but intimately confident. Evidently he was a personage of some account before this

woman of dryland royalty, whoever she might be.

Thia's eyes were on Cliff and he thought he detected a softening of the hard glitter. "Oh, yes," she murmured, "the disability. He is to see Lintarg as Vetter requested?"

Maranu broke out in voluble objection, but was silenced by a fierce look from Thia.

"What say you, oh, Durvil?" she purred, bending her gaze on the bearded one.

"I say there shall be no killing. Maranu was ever violent. But I say he should imprison the passenger until the thing is done, that he may do us no harm."

"He must die!" rasped Maranu, "This one is a spy. Can you not see, oh, Thia, by his attention to our speech that he understands? He is not ignorant of our tongue, as he has protested."

"Is this true, Earthling?" Thia's voice was cold and hard as were her eyes.

Cliff looked full into those blazing orbs and saw there could be no dissembling with this woman. "True, yes, that I comprehend your speech," he admitted, "but that I am a spy, no. I know nothing of your plans and care less about them. I know only what Vetter told me; what he promised. I came here for one thing and one thing only—to visit Lintarg. To try his skill in this—"

He hesitated, looking down at his paralyzed members. Little he cared what devilment these drylanders might be cooking up. All that mattered was what he had come after; he wanted to be out of this place and on his way to the famous surgeon.

Again there was the softening of Thia's gaze, this time more noticeable.

Again the grating expostulations of Maranu, silenced once more by the amazing woman who sat before them all.

"You see," Cliff ventured hopefully, "I have only one desire—I care nothing for your—"

"He must be imprisoned, oh, Thia," Durvil broke in firmly. "There is no other way, regardless of Vetter, regardless of —"

Something snapped then in Cliff Barron's brain. Perhaps it was the nightmare of the journey; perhaps the thin atmosphere and the low gravity of the red planet. Whatever it was, it sent him into a wild rage and he threw himself at Durvil. Though his leg muscles had been greatly weakened by his illness, they were of ample power here, being accustomed to carry much more weight of body on Earth. And he soared high in his mad leap, landing on the squat Martian with both knees and smashing him to the pavement.

"Now go ahead!" he yelled. "Let Maranu shoot, damn him! Damn you all—go on with your dirty work!"

The guards were upon him in an instant. With his useless arms in the way and encumbering him, he could only kick and butt. This was of little avail when they closed in from all sides. But he had the satisfaction of seeing Maranu go down when he brought a knee up into the big fellow's midsection; saw that Durvil lay still where he had fallen.

And then Cliff was helpless in the hands of the guards. Though he struggled mightily, they carried him away. He looked back.

Thia was standing alone, and her scarlet lips quirked in an enigmatic smile.

Cliff was taken to the room where he had first opened his eyes after the swift passage from Earth. More accurately, he was dumped unceremoniously on the stone floor by the guards and left to meditate on his rashness. A key grated in the lock.

"Of all the triple-plated damfools!" he muttered, crawling painfully to his feet, "I am the brightest." He sat heavily on the edge of the cot.

For some time he addressed audible and uncomplimentary remarks to himself by way of such jumbled echoes as might rebound from the blank walls. And then he had calmed in mind sufficiently to take stock of the situation and to speculate on the causes behind it all.

Either Vetter was in league with a gang of dryland cutthroats in some shady undertaking, or he was being duped by those in charge of operations at the Martian end of his space tube. Cliff was inclined to the latter view.

Certainly Vetter had been frank enough and fair enough in his arrangements for the dangerous trial trip. And generous. Cliff had seen the letter of credit that was safely buttoned in his inside vest pocket. He could feel the wadded lump against his ribs now. Fifty thousand zaks of Rispar exchange—enough to cover Lintarg's fee and still leave the young pilot independent. And a personal letter to the great surgeon addressed in Vetter's bold flowing hand. There had been no hitch at the other end; everything was open and aboveboard. But here—something was badly out of gear.

It was mighty queer that all those he had seen at this end were drylanders. Tough ones, too, most of them—like Maranu. And led by a woman like

Thia! But Cliff recalled tales of desert pirates who preyed upon rich cities of the canals and mining settlements of the parched interior as well. Bands of ruthless murderers, these were, and well organized—the greatest problem of the militias and the red police of the scattered Martian communities. No reason a woman might not be leader of such a band—especially one with eyes like Thia's. No reason, either, that they might not be reaching out for new worlds to prey upon. And with this thing of Vetter's in their hands . . .

Cliff raised his head and stared directly into those magnetic orbs of the girl Thia. She had entered noiselessly, and as noiselessly closed the door. But he had sensed her presence somehow. His head had come up without conscious volition.

Automatically he rose to his feet. Involuntarily he caught his breath. Her beauty, in this soft light, was dazzling. The curves of her youthful body were revealed rather than hidden by the draperies of a black gown that shimmered as she moved. She had bared her head of the tiara Cliff had seen there before, and a glorious crown of golden bronze hair tumbled in soft profusion about the creamy oval of her face. The scarlet lips were parted in a half smile. And her eyes, magically, had softened from the glinting jet to a liquid brown. Friendly eyes, and understanding now.

Cliff, getting a grip on his emotions, husked: "Well?"

"Well!" Thia smiled, and, smiling, she was radiant.

His suspicions rising afresh, the disabled pilot hardened himself against the spell of her. "What do you want of me?" he growled.

The long lashes dropped, masking

Thia's eyes momentarily. "I want to help you," she murmured. And the harsh syllables of the dryland tongue were silvery and musical on her lips.

But unreasoning resentment had come to Cliff with the dropping of her eyes. He looked down at his dangling arms. "So that's it!" he rasped, "Pity! You're sorry for a poor crippled Earthling, and you want to help him, do you? Well, listen to me young woman—I don't like the looks of things here and I don't believe in your pretended friendliness. You're the leader of this gang of thieves and killers and you are planning—"

"Stop it!" Thia's voice cut in coldly furious. Black rage had replaced the softness of her level gaze. She threw back her proud head and drew herself stiffly erect. Then, as suddenly as the fury had come, it had passed. "It's untrue," she said calmly. "All of it is untrue. I have some control over my people, yes, but we are no buccaneers as you imply, nor are our plans of such nature as to merit your censure."

"What then?" Cliff's tone was gentler, though he stood his ground. And his own gray eyes looked steadily into those flashing ones of jet.

"I refuse to answer; it is my prerogative. And now that you have taken this attitude I am telling you—nay, commanding you to leave this place at once and go to Lintarg."

Miraculously, the stern gaze had softened as she talked, and Cliff felt the angry color drain from his cheeks. "You—you mean," he stammered, "that I am free to go."

"You *must* go—and quickly." Thia was suddenly ill at ease; nervously apprehensive, it seemed. "But first," she said in liquid, throaty tones, "I must exact from you a promise."

"A promise!" Cliff stared foolishly. This woman was offering him his freedom; his chance to be made whole once more. And he had berated her! "Anything," he agreed huskily.

"First of all you will ask me no more questions concerning myself or my people. Secondly, and of utmost importance, you will reveal not one detail as to our whereabouts here, or Vetter's in Terra, or of the means by which you traversed the distance between the two bodies. For so long as you may remain on the planet Mars, you will not reveal these things. Is it agreed?"

Cliff regarded his disabled members through eyes that suddenly misted, smarting unbearably "Good God, yes! he husked.

"You swear it by the purple Deity of Henes," tensely.

"Yes, and more solemnly than that." He looked up earnestly now into the soft brown eyes that were so anxiously upon him. "I give you my word of honor as a man—as an American."

"It is more than sufficient. Quickly now, oh Cleef Barron." Turning swiftly then, she opened the door a trifle, peered through the crack, and slipped through into the corridor.

They hurried then through endless passages, some smoothly walled and artificially lighted, others rough-hewn in the solid rock, dankly odorous and in Stygian darkness. Where there was light, Cliff was scarcely able to keep up with the scurrying footsteps of his guide; where darkness closed in about them he felt the gentle pressure of her hand on his shoulder, leading him more slowly but just as surely toward their destination. Thia knew every twist and turn of the maze of underground workings.

The way led steadily upward and they had progressed a distance of perhaps three Earth miles when Thia called a halt. A metal-studded door closed the passage ahead of them.

"We have arrived," panted the girl, "just inside the city wall at the bank of Canal Pyramus. The public way above will take you to the central square, where is located the establishment of Lintarg. Henes speed you on your way, oh Cleef."

"Wait!" Cliff experienced a sudden anxiety for her safety and an interest in her he would not have believed possible. "I must see you, Thia, once more; must learn when and how I may see you again. Please tell me."

"You forget, there are to be no questions," firmly.

"True, I promised."

There was the click of a withdrawn bolt and the creak of rusty hinges. The great door swung open and the first lurid light of a Martian false dawn filtered in. Above them the city of Risapar was oddly still; the day had not yet begun.

Thia came out with him to the open air and inhaled deeply of its rare though invigorating substance.

"It is good to be alive," she breathed. "Good to be outside."

Cliff had seen that they were almost at the level of the black waters of the canal and that its steep bank led up from where they stood. But these things made no impression on him at the moment for Thia's gaze was starry in the swiftly improving light of dawn.

"Farewell," she whispered with face upturned, "and Henes be with you always. Think of Thia sometimes—"

"Think of you—Lord! I'll always think of you—and be wishing to see you. If these arms—"

Amazingly then her face drew near. Unbelievably, her lips brushed his. And then, as swiftly as it had happened, she was gone. The door of the hidden entrance clanged shut.

Madly. Cliff dashed his body against the thick moss which covered its outer surface and made it safe from prying eyes. But to no avail. Hardly knowing what he did, he clambered up the nearest stairs to the nickel/cobalt roadway that stretched along the canal. Dazedly he stood there gazing out over the minarets and spires toward the east. Somewhere in the drylands out there beyond the city wall, he knew, was the screened opening through which the space car passed, and beneath it the dome room where Thia soon would sit calmly awaiting whatever adventure it was her people were planning. Dire forebodings came to intensify the new ache which had been so suddenly and unexpectedly implanted in his breast.

A little later, one of the early morning ronsals drifted to a stop before him. The operator yelled sarcastically as he stood staring vacantly into space. Shamefacedly he entered the passenger compartment of the wheelless vehicle. Swiftly rising from the metal surface, propelled and supported a few feet above by the repulsion energies it contained, the ronsal sped toward the great central square of Risapar.

Cliff gave no heed to the kaleidoscopic beauty of shifting colors that played over the multitudinous spires of the city as they whizzed past in the shifting morning light. His thoughts were of Thia and of her association with the drylanders she called her people. He had spent time in the communities of the parched plains between the canals which gave him some

knowledge of the inhabitants. Somehow, Thia did not fit in with the pictures he carried in his mind. She was too delicately formed for a woman of the drylands; her creamy skin not at all like the bleached complexion of the drylanders. She was more like the women of the canal cities in every respect—even her speech held something of a slurring accent that was different from those whom she considered as her own.

And yet those in the cavern of the space car appeared to be her loyal subjects. She was a veritable princess among them. A woman who commanded their respect and obedience; one whom they loved. Still she was marked as apart from them. Aloof, superior, different.

Cliff's throat constricted unaccountably as he visioned her in his mind. The memory of her impulsive farewell would remain with him until the end of time. Even now it haunted him . . . and the thought that she was gone from his life . . .

"Pada-nar!" bawled the operator of the ronsal, glowering back through the glass partition.

Roused from his reverie, Cliff saw they had reached the central square of the city. The ronsal had stopped and other passengers were waiting impatiently. Rispar had come to life; the activity of the new day was in evidence all about him. Hastily the embarrassed terrestrial quitted his seat and flung from the compartment.

Before him towered the slender obelisk-like building that was known throughout all Mars as Tib-Lintarg. A worthy monument to the skill of the great physician whose name it bore. Cliff's heart missed a beat as he viewed it—his hard-earned and much-desired goal.

And then he was sprinting toward the institution like a man possessed. A new urge was upon him; he'd go back to help Thia. Thia, once these crippled arms of his were good as new! He'd return to the secret entrance by the canal and batter down the door. He'd—

"Your're Cliff Barron, aren't you?" A stocky terrestrial stood before him, blocking the entrance of the building, a man Cliff had never seen.

"Why—why yes," he stammered, halting his mad dash, "Why?"

"Just wanted to ask you a few questions, that's all," the fellow drawled.

"By what right?" Something warned the young pilot and he was on his guard instantly.

"I'm an operative, League of Terra Secret Service," in low tones.

"You can't question me here."

"I know—not without extradition and all the mess of Martian courts. But don't get sore. I think you'll answer, for patriotic reasons. How did you get here from Earth?" There was a veiled warning in the stocky one's words.

"That's my business." Cliff tried to shove past him.

"Just a minute, young fellow." A heavy hand was on his shoulder. "Ever hear of Carl Vetter?"

"That's my business, too." The young pilot jerked free and went into the building, knowing full well the other dared not go further. And yet he was distinctly alarmed by the occurrence. Someone, somehow, was on the track. And Thia was in danger. The words of his promise flashed across his mind as he entered the cage of the lift. He gritted his teeth. A dozen ronsals couldn't drag that secret out of him.

But Cliff Barron was a sick man, sicker than he knew. The strain of the past few hours had been terrific for a man in his weakened condition and was telling on him now. He reeled as he left the cage at the floor of Lintarg's private consulting room.

A man was there in the reception hall, sitting on one of the lounges, a terrestrial. He sprang to Cliff's side, offering him assistance. Swaying a bit, the disabled pilot regarded with owlish suspicion the man through eyes that saw only a blurred image.

"You another League of Terra man?" Cliff demanded thickly.

"I am," in hushed voice.

This one was leading him to a seat, or trying to. "Well, I'm Cliff Barron all right," he jabbered loudly, "and if you want—"

"Hush," the other warned him.

But Cliff, in his present state, was not to be gainsaid. "—if you want to cross-examine me you're crazy," he babbled on. "I'm here to consult Lintarg and I'm telling nothing to you or to anyone else. Do you get me? Nothing—how I came here, or any other thing about me you may want to know... get me?... not a word..."

And then Cliff Barron was falling forward. He had a confused picture of white-clad figures moving toward him... of an alarmed face peering into his own... kindly bearded Martian with white coat... Falling, Cliff was, down through the building... hundred and six floors... peace and rest at bottom...

Utter darkness swooped down upon him. Nothingness.

A long-drawn musical note, vibrant and mellow. Grateful warmth that penetrated deep into the tissues, stim-

ulating muscular activity, setting the pulses athrob, revitalizing bodily functions long dormant. The tang of ozone, like sweet mountain air filling the lungs. Light-images, hazy and unstable at first, resolving into clear-cut forms of things animate and inanimate... substantial and real...

Abruptly, Cliff Barron knew he was in the land of the living.

The musical note slithered down the scale and trailed off into silence. Cliff drew in his breath sharply; looked down at his nude body. He was standing on a metal plate that glowed with pale rosy light. His flesh was firm, his skin healthy. His hands—he moved a finger; spread all ten fingers wide. His arms, no longer withered and rigidly twisted—he flung them wide with sudden vigor.

A choked sob rose in his throat.

He looked up slowly and reverently into a smiling, gray-bearded face. Lintarg. Other white-coated Martians were in the room—a room of crystal walls and weird apparatus. All the white-coated ones were looking at Cliff, watching him intently as one watches the subject of a laboratory experiment—for untoward reactions. All excepting Lintarg. The great surgeon's gaze was confident, friendly and sympathetic. Cliff tried to speak and couldn't.

It was no less than a miracle, this thing that had been done by the famed healer of Risapar. A man made over. A healthy, normal human being made from a physical derelict. A wreck salvaged.

Cliff extended his hands and turned them palm upwards. Wriggled his fingers as an infant, when first cognizant of the strange appendages, wriggles its toes. Impulsively, he stretched

those muscular new hands of his to Lintarg. Gripped him mightily. Said not a word.

A little later, when Cliff had mastered his emotions, a flood of questions clamored for utterance. The staff physicians and attendants had quitted the laboratory. He was alone with the great Lintarg.

"Tell me doctor," he demanded, "Am I entirely fit and well?"

Lintarg's round eyes twinkled behind his spectacles. "You feel fit, don't you?" he countered.

"Never better. But I don't understand; my lost weight has been returned; my senses seem more acute—everything. I am a new man—"

"You are precisely that, Barron. And wondering about it all, I am sure. We will discuss it in your room. Here—cover yourself and come with me." Lintarg tossed him a light robe.

In the small bare room with the high white bed, Cliff hugged himself and grinned like a boy. Rising to his toes and with legs rigid, he bent double and touched the tips of his fingers to the floor.

"Here, here," Lintarg, behind him, reproved, "None of that, young man. You are to take to your bed at once."

"Bed"—blankly. "Why, I feel—"

"Precisely; you feel like dancing and singing and being many fools combined in one. Nevertheless, you are going to bed—a night of real sleep is necessary after your experience. Normal sleep."

To Cliff it seemed he was in condition to tackle a dozen wildcats then and there. But he yielded to the great physician; stretched flat under the covers with arms outside where he could see and gloat over their easy movement, their muscular—

"You are a fortunate young man,"

Lintarg pronounced, interrupting his thoughts, "Extremely fortunate."

"I'll say I am." Cliff looked up into the grave round eyes and a wave of deep gratitude swept his being. Gratitude he could not hope to express properly. "I can't tell you, sir, how much—"

"Forget all that." Lintarg's voice was gruff, but understanding was in the round Martian eyes. "The thing is done, and you will be discharged in the morning. Meanwhile, as I am a very busy man, I must bid you farewell. It will be impossible for me to see you tomorrow. So good luck to you, my boy."

"Wait sir; tell me how—what—"

"Yes." Lintarg glanced swiftly at the huge Martian chronometer he drew from his pocket. "Yes, of course, you will not remember it. You fainted in the hall, Barron, and we brought you at once to the operating room. It was none too soon. Of the operation itself I shall speak little, as the details are highly technical—the repair and rejuvenation of certain motor and sensory nerve centers—you may hardly expect to comprehend. Then followed five days of intensive treatment, healing scars, building up tissues, and strengthening the weakened organs by means of curative rays. Electrical, you understand. Systematic exercise, proper dieting—it is, after all, quite simple."

"Five days!" Cliff stared. "And I know nothing of it—this was all done while I remained unconscious!"

"Precisely; it is the Lintarg system. We keep the patient's mental processes entirely dormant during treatment, in order that there be no possibility of conscious or subconscious resistance of the mind. Ninety days of convalescence are thereby accomplished in five

days of time. Is this all clear to you?"

"Y-yes." It wasn't clear, but Cliff had a vague understanding of what they must have done to him.

"Then—truly—I must be leaving you." Lintarg moved to go.

"Your fee, sir—"

"All taken care of by your benefactor, and your letter of credit is intact as well. I repeat, you are a fortunate young man." The surgeon was fidgeting; anxious to be gone.

"Oh—I'll not keep you sir. Thanks—it's all I can say—I—" Cliff swallowed hard; extended his hand—the firm strong right hand Lintarg had given to him.

The Martian gripped it, smiling. "Henes be with you my boy." And then the great Lintarg was gone.

Cliff lay for a long time thinking. Moving his fingers one by one, trying each in turn. Flexing the muscles of his arms. Peering at the remade members as if they belonged to another man. Marvelling.

He thought of what Lintarg had told him. That sealed letter of Vetter's had taken care of the great surgeon's fees—large fees, too, they must be. Vetter had done more than he agreed. Good old Vetter, whatever his connections with those drylanders . . .

Abruptly Cliff Baron sat up in his bed. Memory of Thia smote him like a blow. Five days! He had been out of the picture five whole days while she was in danger of unknown nature. But serious danger. He remembered the League of Terra men. They were on Thia's trail—or Vetter's. After the whole gang probably.

He jumped from his bed. Stay here over night?—not if he could help it. He rushed to the small closet in a corner of the room; saw his clothing hanging

there neatly arranged. In a panic of apprehension, he dressed more swiftly than he had done in his lifetime.

Flinging open the door, he came face to face with a nurse. A round-eyed Martian girl, stolid of features and severely prim in the starched white uniform of her calling.

"Henses!" she gasped. "The patient is mad. You must return to bed instantly, Earthling."

"Nonsense, woman!" Cliff brushed past her and strode down the hall. "I'm as well as any man in the city. And I'm going away from here."

The nurse pattered after him, clutching at his arm. He shook her off. An orderly, a great bleached-skinned hulk of a drylander, came from a side hall, blocking his way. Cliff flung him aside as if he had been a child.

He was in the outer office then, marching past the astonished and protesting registrar into the reception hall. Other orderlies came running, but these fell back under his grim threats. A lift stopped at the floor; the door opened. Cliff flung himself inside and was whisked away to the lower regions.

Reaching the main entrance of the building, he looked out over the central square of Risapar with satisfaction. The city was in darkness save for the twinkling cold-white lights of the square and the roadways. The pedestrian ways and moving platforms were almost deserted. Cliff drew a breath of relief and stepped out between the great columns of the portal.

And then he was stopped short in his tracks by a sound that came to his ears. A sharp click, directly behind him, followed by a whir as of some swiftly rotating mechanism. He wheeled about to look into the grim visage of the Secret Service operative

who had first accosted him and into the violet glare of light that sprang from a pistol-like contrivance that was thrust in his face. A languorous, numbing sensation flashed over his body and his knees sagged.

"Now you'll talk, buddy," the operative growled. "Get down there to the corner where you see that small private ronsal. Quick!"

Everything within him cried out against it, but Cliff was without power to refuse. The wily operative was using a hypno-ray, one of those devilish contrivances that rob a man of his will and render him utterly subjective to the will of another. Like an automaton Cliff faced about; as in a dream he walked jerkily to where the small ronsal was waiting at the roadside.

The second operative, the one he had seen in Lintarg's reception hall, was inside the ronsal. The one with the hypno-ray backed Cliff against the side of the vehicle, in the shadow.

"Now!" he snarled, bringing the violet glare closer, "You'll tell us how you got here from Terra. Make it fast, young fellow."

Cliff shut his eyes, endeavoring to blot out the violet glare that had him in its power. But to no avail. He struggled mightily to clamp his jaws tight that his lips might not speak the words. But in his consciousness that other will was beating his down—a will inferior to his own had it not been supplemented by the fiendish energy of the violet glare. Mechanically his voice repeated the fatal words:

"Carl Vetter's space car . . . hurled across void in less than an hour . . . projector of car in cavern deep in mesa . . . Arizona—in desert . . . due south of Tuba City . . ."

"Enough." The violet glare was extinguished.

Cliff had vague knowledge that both operatives were now in the small ronsal. He heard the faint whine of the vehicle's starting generators; battled desperately to regain control of his own movements. But too late he succeeded. With a swift rush the wheelless cab had risen from the nickel-cobalt roadway and lurched off into one of the express traffic lanes. By the time his brain had cleared of the hypno-ray's influence, it was lost to his view.

The stark awfulness of the thing he had done smote Cliff with overwhelming force. He had betrayed Vetter, his benefactor; he had broken his solemn promise to Thia. Thia the beautiful, the impulsive, who was in such grave danger. True, he could not have helped it—it was impossible for man to fight the energies of the hypno-ray. But that made the thing none the less calamitous.

He rushed shouting into the square, to a waiting ronsal of the public transportation system.

Of the swift ride along Canal Pyramus toward the city limits he took little heed. At the back of his brain was hammering the dread certainty that he would arrive too late. Even now the word was being flung earthward through the ether—agents of the Secret Service would be at Vetter's laboratory in the mesa within an hour.

Lucky he had not been asked any details regarding the Martian terminal of the space tube. If Thia were still there, she at least might be warned. If she had gone to Earth . . . Cliff shuddered.

Sykes had done this thing, smugly complacent Leonard Sykes, who had refused Cliff the chance Vetter later

gave him. Sykes, somehow, had learned of Vetter's space tube. Unable to locate it, he had used his vast wealth and political influence to corrupt even the League of Terra Secret Service. And now he would ruin Vetter. Thia, whatever her secret connection with the project, was in danger of exposure—perhaps of death. There was a mystery here, of course, in the Risapar terminal of the space tube—shady dealings, maybe, between Vetter and these drylanders of Thia's. No matter. They had given Cliff his coveted chance of recovery and he was throwing in his lot with theirs.

The ronsal stopped at Cliff's destination. When it had slid off into the night he clambered down the stair to the lower level of the canal bank. How different from when he had staggered up these same steps with useless arms dangling!

By the dim illumination of the flickering lights above, he made out the approximate location of the hidden entrance of the underground passages which communicated with the cavern of the projector. It had remained indelibly written in his memory.

Then he was tearing at the thick moss of the sloping bank with his fingers. It resisted with the toughness of leather. Desperately he cast about for an implement. The iron rail of the stairway—he tore away a six foot section of its length as if it had been the lightest of bamboo and attacked the thick moss violently.

At length he had located the door frame. Of smooth metal, it was, and entirely unyielding. Between the strapped and studded wood of the door itself and the frame was not the smallest crack into which he might insert his improvised crowbar. But he located

the outer plate of the lock eventually and went at it with the fury of a madman, his iron bar used as a battering ram.

He looked up anxiously to the pedestrian way at the top of the bank, fearing the din was attracting attention. But no faces peered down at him as yet, and he went back to his task with renewed vigor.

Presently there was a snap of metal inside. The door yielded slightly. An inch, two inches. The iron bar crashed home again and again. Then, suddenly, the door swung inward, creaking protestingly, and Cliff was in the dark passage.

He ran frantically, blindly, bumping heavily against rough-hewn walls as he lost his sense of direction in the darkness. He came out into lighted passages that seemed familiar, yet gave him no indication as to whether his was on the right track. Into the darkness again and again, feeling his way, stumbling and panting, scratched and bruised by many contacts with the jagged stones of the passage walls.

It was a hopeless task, finding his way in the labyrinth of dark tunnels and lighted ones that were equally unfamiliar. He shouted occasionally, pausing to listen for replies. But none came.

God!—if Thia had gone! Or, if, even now, she was on her way to Earth in the space car . . . what fate awaited her at the other end of the tube? Cliff could only imagine, and, imagining, he conjured up in his mind the most frightful of possibilities.

And then, amazingly, he had come out into the cavern of the space car. He saw that operators of the projector were at the controls. Instructions were being called out by the observer at the

radio telescope. And, on the landing platform at the entrance manhole of the car, was Maranu. Thia, in a boyish leathern garment, was entering the bullet-like vessel of the heavens.

"Stop!" Cliff was yelling as he ran toward the platform. "Wait, Thia—they know!"

But the girl was already inside, and Maranu faced him with an ugly leer as he mounted the platform. "She can't go, you fool!" Cliff gibbered. "Don't you understand? Terrestrial Secret Service—they will be waiting at the other end. The car must stay here."

Maranu's eyes narrowed. His burly form blocked the entrance port of the car. "So!" he rasped, "You think it must stay."

Cliff was upon him then, bearing him to the floor. In a flash he had crawled over his prostrate form and was in the airlock of the car. There was a yell from outside and the port cover swung home with a crash. Cliff heard the jangling of the bolts as it was fastened to its seats. But the import of this did not impress itself upon him then. He was too intent upon his quest of Thia.

"You monster, you've killed them!" Cliff heard Thia's voice beyond the door of the passenger compartment.

Bursting through, he halted in amazement. She was facing Carl Vetter, a new Vetter with disarranged hair and staring eyes in which blood-lust gleamed. His fingers clutched the butt of a flame pistol and a heap of bodies was on the floor—bodies of the drylanders.

"You've been killing them all," Thia moaned, "And now you want to kill me. Oh, you vile traitor—"

"What's this?" Cliff yelled in amazement.

Thia turned swiftly and threw herself in his arms—those new strong arms that closed protectingly about her.

"You!" Vetter exclaimed, falling back. His face paled to ghastly whiteness. "You! And completely recovered."

"Yes, me. Vetter. What's the idea?" Cliff still was unable to credit his senses. That a man who had done the thing Vetter had done for him should be engaged in what was evidently nefarious business, was incredible. A murderer—Vetter? Impossible.

The buzzer shrilled viciously. They were sending the car across!

Vetter had recovered his equanimity and was raising the flame pistol. A maniacal gleam had come into his eyes.

"Stop!" Cliff snapped. "They're wise—at the other end. Waiting for you—the authorities."

"Wha-a-at!" Vetter lowered the muzzle of the pistol.

Again the buzzer shrilled—twice. They were speeding the start.

Cliff swung Thia in his arms and deposited her in one of the hammocks. Only one minute before that awful pressure—

"No!" Vetter snarled. "She must die!" He flung up his arm with the pistol trained upon her.

Cliff sprang swiftly in a flying tackle, wrapping his arms about the big man's knees and bringing him to the floor with a terrific thud.

"Cleef! Cleef!" Thia was screaming. "Quickly—into the swing."

Vetter had struggled to his knees when Cliff threw himself into the nearest hammock. Murder was in his eyes and he raised the flame pistol toward Cliff, cursing. Truly, this was a new Vetter.

Then came the shuddering vibration of the car, the terrible pressure of acceleration. Cliff was pressed gasping into the cushions as the space car lurched off into the heavens.

Vetter's scream of agony rose high as he was crushed to the floor-plates. There was the sharp snapping of his bones; weak whimperings gasped painfully. Vetter had paid the penalty of his perfidy.

Still the awful pressure increased, driving Cliff deeper into the cushions with every passing second. He tried to move, tried to raise his voice in words of comfort to Thia. It was utterly impossible. His vision lapsed under the smashing pressure; his breath came short.

There was silence in the speeding car, save for the throbbing of the pumps that supplied the oxygen they breathed. On the floor there were the dead drylanders—and Vetter. In the hammocks two living beings; inert; helpless.

At the end of the journey—what?

After endless time it seemed the pressure of acceleration had eased slightly. Still Cliff was unable to move. But his brain was active and he pondered the strange situation.

What was this thing Vetter had done? Evidently there had been a plot to carry these drylanders of Thia's to Earth. Perhaps they were the piratical crew Cliff had thought. Perhaps Vetter, discovering this, had been slaying them as they entered the space car one by one. A qualm assailed the young pilot as he thought of his benefactor—a crushed mass there on the floor beneath the hammock.

But Vetter had intended to kill Thia; would have killed Cliff had not the space car leaped into the heavens in the nick of time. And Thia was in

no way responsible for whatever deeds of dishonor might have been contemplated by those she called her people. Cliff made up his mind on that point. She was too essentially feminine; too much of the tenderheartedness of womankind was in her makeup. She was the very personification of the ideal Cliff had always secretly cherished. Too *human*, though her eyes might flash fire when anger overcame her. A delectable and desirable creature . . .

The pressure *was* easing. Cliff found he could roll his eyes and that breathing was somewhat less difficult. But he was as yet unable to move his limbs or to speak. He assumed they had reached the mid-point of their journey and that deceleration had commenced for the long gradually slackening dash to Earth.

What was to become of them there? Cliff swore a mighty oath to himself that he'd battle for Thia against them all. Against his own world: against all Mars, if need be.

Definitely now, the pressure was less. He moved his legs and arms slowly and painfully. "Thia!" he managed to gasp.

"Y-yes," after anxious moments.

"You all right?"

"I—I am." A sob was in the girl's mellow voice.

The pressure suddenly was released entirely. Cliff made a move and was astonished to find his body drift out of the cushions and away from the hammock. Weightless! In a flash he understood what had occurred; the receiving tube of vibrations from Earth had been discontinued. They were drifting in space, helplessly entombed in a closed vessel whose oxygen supply could last no more than ten hours—doomed.

"Thia!" he groaned.

Pushing against a stanchion of the hammock support, he drifted over to where the girl lay motionless. His fingers twined with hers.

All else was forgotten as instant revelation came to each that the other cared. No whispered words were needed, no stereotyped avowals. They *knew* . . . And, knowing, were speechless—forgetful for the moment of the hopelessness of their position.

"You understand what this means—the stopping of the space car?" Cliff asked gently, after a while.

"Yes—I know. We were let loose at the point where the transmitting and receiving tubes met in space. Something happened to cut off the power at the terrestrial station, and we are adrift. We shall die together, Cleef." Desperately, Thia fought back the sob that was in her throat.

To find happiness, undreamed-of happiness, and then to lose it! Cliff swallowed painfully, taking her in desperate enfolding arms as if by their new-found strength he might save her.

The pumps throbbed softly in the adjacent compartment.

Presently they were talking of other things. Resigned to the cruel fate, they would at least pass their last hours together in sympathetic understanding—and in sanity. Resolutely they turned their thoughts and conversation from the future, which might have been theirs, but now could never be.

And many things which had been puzzling Cliff became clear to him as Thia spoke of her past life.

As he had suspected, she was no drylander. Pampered, orphaned daughter of an influential patrician of Risapar, she had fled to the drylands two years previously to escape a distasteful marriage about to be forced upon her by the Eugenics Board of the Canal Cities

Union. She reached the City of Diamonds, the walled city of fabulous wealth that lay in the drylands only a few miles from Risapar. And here she found refuge.

A plague visited her new home, decimating the population of the City of Diamonds and striking terror to the souls of all who dwelt within the city walls. Thia had been an angel of mercy, working day and night with the physicians, organizing squads of nurses, and herself going into the homes of the afflicted and ministering to them.

Thia passed swiftly over this phase, but Cliff was able to learn that the survivors, mostly males and only a few hundred in number, had set her up as their new ruler. This they did in gratitude and in real appreciation of her organizing ability.

Then had come a demand for tribute from the Canal Cities Union. Her people had refused and had taken to the diamond mines and the maze of passages underneath their city, blasting the entrances shut to hide themselves from the militias sent against them.

Outlawed by the authorities and their lives forfeit, they had dwelt underneath the surface. Eventually they explored connecting passages and came upon the retreat of Vetter and his companions in the space tube development. They had bargained with Vetter to convey them to Earth and he had agreed to do so for a vast fortune in diamonds that was offered. But none of the drylanders would risk passage in the car until a man of sufficient courage, or sufficiently desperate, might be found. Thus Cliff had come into the picture.

Thia had successfully concealed from her people the fact that Cliff had escaped, and they had spent the past

five days sending them across to Earth in the tiny bullet-like car. But today, with most of them gone, Thia had become suspicious. Maranu always guarded the entrance and her people had gone into the space car singly. And on Maranu's cruel face there was always that sinister smile. And today had come Thia's own turn; she had entered the car and had learned what had been happening . . . Cliff himself had seen . . .

She shuddered as she glanced at the heap of corpses. Stirring they were, in their weightlessness. Shifting position eerily.

"Lord!" Cliff muttered. "You think Vetter killed them all? Every trip was the same?"

"I do; I am sure of it."

"Why—in God's name why?"

Thia's eyes darkened to jet. "Maranu!" she hispered. "He and Vetter sold out to the Canal Cities Union. For additional payment of gold and precious stones they became the executioners—they—"

"Vetter—did—this!" Cliff marveled. "After what he did for me with Lintarg. How could he? I'm glad I gave the thing away."

"You—gave what away?" Thia's eyes were wide upon him.

He told her swiftly of how he had been forced to tell of Vetter's Arizona retreat.

"You were not to blame," she exonerated him. "But, Cleef, I do not understand—these Secret Service—why should they care?"

Cliff told her bitterly of Leonard Sykes, his rancor returning. At least he had the treacherous murderer Vetter to thank for Lintarg—

"Hush—what was that?" Thia interrupted him.

There was the sound of metal con-

tacting with the shell of the car somewhere about the entrance port. Their bodies drifted toward that side of the vessel. Some object of considerable mass had approached them, bringing this simulation of gravitational force by its attraction. A heavy thud followed and the space car lurched violently.

"A rocket ship!" Cliff exulted. "We're saved, Thia, we're saved. It could be nothing else out here—nothing but a space liner."

Choking with emotion, he held her fiercely close.

The sound of heavy footsteps resounded on the shell of the space car. Men in vacuum-tight apparel were out there making a rescue connection. In a few minutes they'd be inside.

Cliff's jubilation gave way to swift realization.

"Thia," he husked. "They'll take you. By the treaty between the Canal Cities Union and League of Terra your return will be demanded."

"They'll take you, too, my Cleef," sadly, "for you will be considered as an accomplice. There is evidence that Vetter sent you to Lintarg—he paid—"

Cliff grabbed up the traitor's flame pistol from the floor. He'd not let them take her! Better to die here together than that—

The entrance manhole was open and someone was coming through the airlock. A vacuum-sealed connection had been established with the rescuing vessel.

"Chet!" exclaimed Cliff as a square-shouldered, smiling youngster came through the door, "Chet Andrews, by all that's good and holy!"

Andrews, his bosom pal in the old days—pilot of the H-4—good old Chet was here!

"Yeah, it's me." His friend drifted near, pulling himself along from

stanchion to stanchion. "Put away that thing," he grinned, eyeing the flame pistol, "We're taking you aboard, you bonehead."

"No!" Cliff was suddenly panicky. "You don't know, Chet—Thia here—they'll return her to Mars. There's a death sentence—"

"Such boneheadedness!" Chet continued to grin. "You don't think we'd stand for that, do you? Your old pals? Not much."

"Sure there's a way out?" Cliff set the pistol down.

"Sure—absolutely—come on."

Though he saw not how, Cliff believed him. Holding fast to Thia, who helped as best she could in the awkward absence of appreciable gravity, he made his way through the airlock after Chet.

In the artificial gravity of the H-4, they moved naturally again. Chet was chuckling with glee as he led the two toward the master stateroom of the liner.

"Got a surprise for you, Cliff," he boasted.

"What?"

"Wouldn't you like to know?"

And then they were inside the room and Cliff was staring incredulously at a pudgy, smiling man who sat by the library table. Others of Cliff's friends were grouped about the man—Davis, Trent, Thomas. But Cliff had eyes only for the pudgy one and mad rage surged up in him.

"Leonard Sykes!" he bellowed. "You dirty swine!"

He plunged forward. More double-dealing, he supposed. Well, at least he'd have the satisfaction of repaying Sykes—

"Easy now!" "Cut it out, pilot!" "Don't be a bonehead!" The soothing words of friends were in his ears as

they hemmed him in, holding him off from the man he intended to pulverize. Thia had drawn back against the wall and stood staring.

"Let me at him!" Cliff yelled, "I'll mop the floor with him. You know what he did?"

"Yeah, we know what he did," Chet Andrews drawled, thrusting his face close to Cliff's and hanging tight to his wrists. "He fixed you up, that's what he did. Fixed things with Lintarg—Sykes did, not Vetter—don't be a bonehead all your life."

"Sykes—did—" Cliff let his arms fall weakly at his side and moved to a chair, where he sat down dazedly. He stared at his former employer, who continued to smile. "Is this true, Mr. Sykes?"

"It is, my boy." Sykes' gaze was frank, kindly.

Cliff hunched himself dejectedly where he sat. It seemed as if he had been seventeen kinds of fool. "I—I'm sorry then, Mr. Sykes," he stammered. "I've been thinking all this time—"

"I know what you've thought," returned Sykes, "and small wonder. I'll explain, if you will listen."

Cliff listened. The matron on board had taken charge of Thia and he gave his undivided attention to what the financier had to say.

"Barron," Sykes told him. "I had to do what I did—refuse the very reasonable request you made of me. Two Secret Service men were in the next room and I was acting in accordance with instructions. A serious situation had arisen between the League of Terra and the Canal Cities Union that amounted to a threat of war. In some manner the Martian Union had learned of Vetter's machinations, though they could not locate his apparatus on Mars

nor could they find the condemned drylanders he was negotiating with. But their spies in America had the information that he intended to approach you, Cliff, in the matter of the trial trip. And they put it up to our Secret Service to trail you to Vetter's lair, using you as the bait with which to trap him. But his autogiro was too fast for their antiquated ships and they lost him. Hence came the attempt to get information from you by others of their number before your operation. Here again they blundered, or you outsmarted them, but finally they succeeded in locating Vetter's plant in Arizona and shut off the power there."

"Yes, they succeeded all right," said Cliff dryly. "But you, Mr. Sykes, how did you come to be out here? And how do you know all this?"

"We came out at once after you had left my office. I suspected what Vetter was up to, as he originally stole this invention from an old crony of mine. He worked on your resentment against me and on your former disability to get you to make this trial he dared not make himself. He was crafty, Vetter was."

"I'll say so!" growled Cliff, a light dawning on him. "Then Vetter didn't —"

"He did not," Sykes interrupted. "The letter of credit he gave you was forged; the supposed letter to Lintarg only blank paper. He had counted on Maranu to make away with you when you arrived, but Maranu failed him, I take it, on account of Thia's intervention."

Cliff nodded.

"But I have agents in Risapar, Baron, and I kept in touch with them by etherphone. They arranged everything with Lintarg, even to the new letter of credit — and kept their mouths shut, too."

"Then you, not Vetter, did this — for me!" Consumed with chagrin, Cliff listened as Sykes went on with the story.

Though he did not know the location of Vetter's projector, Sykes did know of the existence of the space tube. He had come out here in anticipation of just such a thing as had happened; had hovered in space with the H-4 midway between Mars and Earth, hoping to rescue anyone who might be set adrift in the space car. He had kept in touch with the situation by means of etherphone conversations with his agents on both Earth and Mars. And here he was, Johnny-on-the-spot!

Cliff could restrain himself no longer. He pleaded with Sykes for forgiveness. Murderous rage had been in his heart, and misunderstanding. But Sykes would have none of his apologies, and his old buddies made sport of his embarrassment. It was good to have friends like these!

A little later Thia returned with the matron and came at once to Cliff's side. He observed with pride the admiring, envious glances of his buddies.

"And what about us, Mr. Sykes?" Cliff asked, drawing Thia to him. "This girl can not return to Mars, you know."

"Nor to Earth." Sykes' gaze was solemn. "As far as that goes, Baron, you are no better off yourself. Both of you are exiles. You must know the status of diplomatic relations between the League of Terra and the Canal Cities Union. Even though there was double-dealing on the part of the Union when they bought Maranu and Vetter off without advising the League, they will deny it and will still insist that we keep the letter of the law on extradition. Neither of you may be harbored safely on Terra."

"I've always wanted to visit Cal-

listo," Cliff said vaguely. He had heard of the idyllic beauty of that satellite of Jupiter from returning adventurers.

Leonard Sykes permitted himself a chuckle. "You read my mind, Barron," he said. "It is the very place for you and your bride."

"Bride!" blankly.

"Within ten minutes." Sykes beamed expansively.

With a gurgle of delight Thia crossed to where he sat and hugged him enthusiastically. Sykes reddened painfully, and every man in the room was consumed with envy.

A space pilot is vested with the same authority as is the captain of an ocean-going vessel of Earth. And so it was that Cliff and Thia were made one in a simple ceremony performed by Chet Andrews.

"Now we come to the means of getting you two to Callisto," said Sykes, when the congratulations and felicitations were over. "Of course it is impossible for the H-4 to carry you there; the ship would be missed by the Interplanetary Police if she were to be away for so long."

"What then?" Cliff asked.

The financier's eyes twinkled. "You've been itching for a long time to sit at the controls of an ethership, haven't you Barron?"

"I'll say so!" Cliff looked down at his strong hands, so lately clawed and useless. "Ever—ever since—"

"Exactly." Sykes grinned understandingly. "Well how would you like to take over the H-4's tender?"

"You—you mean—"

"I mean I'm giving you the Hornet. Take her and go to Callisto with your charming wife. And, some day perhaps we shall pay you a visit there—some of the boys and myself. What do you say?"

Cliff said nothing. He couldn't speak for the fullness of his heart, but his grip said more than mere words.

"It'll be a fine little ship for a honeymoon," Sykes added, his eyes misting and his voice wistful.

When the tiny ethership Hornet slipped from her air-lock in the side of the H-4, Thia was beside Cliff at the controls. They waved a farewell to Chet and Sykes as Cliff maneuvered to pass the forward port of the H-4. And then the Hornet drove off into the blackness of the star-studded heavens.

They passed the bullet-like shell that was the tomb of Vetter and the last lot of drylanders he had murdered.

"I did all I could for them," Thia murmured.

"Yes." Cliff set a course for the orbit of Jupiter. "You've done far more than your share, my dear."

"You're not sorry?" she shispered dreamily.

"Sorry!" Cliff looked off toward the H-4; saw the sudden flare of her stern rocket tubes as she made for Terra. "Sorry! Why, I'm the luckiest man in the universe. I've always been a drifter, a lover of faraway places. Earth was no more my home than Mars or Venus. And now I'll not only have a new home and the means of traveling through the heavens when I like—I'll have *you*."

Thia dropped her tired head to his shoulder. "I too," she sighed blissfully. "What more could I ask?"

They sat thus, silent for many minutes, while the Hornet drove on into the void toward the new land and the new life that held such promise of happiness. And when next they spoke, it was only of the future.

The End

THE EGGS FROM LAKE TANGANYIKA

CURT SIODMAK



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The giant insect story didn't begin with H. G. Wells, but it may have well culminated when Curt Siodmak created a truly horrendous tse-tse fly of monstrous proportions. For even though it was hailed as a "classic" when it first appeared in 1926 one can't help wondering just how much tongue was in the author's cheek when he created "The Eggs from Lake Tanganyika."

PROFESSOR Meyer-Maier drew a sharp needle out of the cushion, carefully picked up with the pincers the fly lying in front of him and stuck it carefully upon a piece of white paper. He looked over the rim of his glasses, dipped his pen in the ink and wrote under the specimen:

"Glossina palpalis, specimen from Tsetsefly River. In the aboriginal language termed nsi-nsi. Usually found on river courses and lakes in West Africa. Bearer of the maldy Negana (Tse-tse sickness—sleeping sickness.)"

He laid down the pen and took up a powerful magnifying glass for a closer examination. "A horrible creature," he murmured, and shivered involuntarily. On each side of the head of the flying horror, there was a monstrous eye surrounded by many sharp lashes and divided up into a hundred thousand flashing facets. An ugly proboscis thickly studded with curved barbs or hooks grew out of the lower side of the head. The wings were small and pointed, the legs armed with thorns, spines and claws. The thorax was muscular, like that of a prize fighter. The abdomen was thin and looked like India rubber. It could take in a great quantity of blood and expand like a balloon. On the whole, the flying horror, resembling a pre-historic

flying dragon, was not very pleasant looking—Prof. Meyer-Maier took a pin and transfixed the body of the fly. It seemed to him that a vicious sheen of light emanated from the eyes and that the proboscis rolled up. Quickly he picked up the magnifying glass, but it was an optical illusion—the thing was dead, with all its poison still within its body.

Memories of the Expedition to Africa

With a deep sigh he laid aside pincers and magnifying glass and sank into a deep reverie. The clock struck 12. 1-2-3-4-5, counted Professor Meyer-Maier.

In Ujdjidi, a village on lake Tanganyika, the natives had told him of gigantic flies inhabiting the interior further north. These monsters were three times as big as the giants composing the giant bodyguard of the Prince of Ssuggi, who all had to be of at least standard height. Meyer-Maier laughed over this native fable, but the natives were obstinate. They refused to follow him to the northern part of Lake Tanganyika. Even Msu-uru, his servant, who otherwise made an intelligent impression, trembled with excitement and begged to be left out of the expedition—because there enormous flies and bees were to be found,—that let no man approach. They drank the river dry and

guarded the valley of the elephants. "The Valley of the Elephants" was a fabled place where the old pachyderms withdrew to die. "It is inexplicable," soliloquized Meyer-Maier, "that no one ever found a dead elephant."

The clock struck 6-7-8.

The natives had come along on the expedition much against their will. Meyer-Maier had trouble to keep the caravan moving up to the day when he found four great, strangelooking eggs, larger than ostrich eggs. The natives were seized with a panic, half of them deserting in the night, in spite of the great distance from the coast. The other half could only be kept there by tremendous efforts. He had to make up his mind finally, to go back, but he secretly put the eggs he had found into his camping chest to solve their riddle.

Now they were here in his Berlin home, in his work-room. He had not found time as yet to examine them, for he had brought much material home to be worked over.

The clock struck 9-10.

Meyer-Maier kept thinking of the ugly head of the tse-tse fly that he had seen through the magnifying glass. A strange thought occurred to him and made him smile. Suppose the stories of the natives were true and the giant flies—butterflies and beetles as big as elephants did exist! And suppose that they propagated as flies do!—each one laying eighty million eggs a year! He laughed aloud and pictured to himself how such a creature would stalk through the streets.

A Strange Sound and the Hatching of An Egg

He broke off suddenly, in the midst of his laughter. A sound reached his

ear, an earsplitting buzzing like that of a thousand flies, a deafening hum, as if a swarm of bees were entering the room; it burst out like a blast of wind through the room and then stopped. Meyer-Maier jerked the door open. Nothing. All was quiet.

"I must relax for a while," said he, and opened the window. He turned on the light and threw back the lid of the big chest, which contained the giant eggs. Suddenly he grew pale as death and staggered back. A creature was crawling out, a creature as big as a police dog—a frightful creature, with wings—a muscular body, and six hairy legs and claws. It crept slowly, raised its incandescent head to the light and polished its wings with its hind legs. Faint with fright, Meyer-Maier pressed against the wall with outspread arms. A loud buzzing,—the creature swept across the room, climbed up on the window sill and was gone.

Meyer-Maier came slowly to himself. "My nerves are deceiving me. Did I dream?" he whispered, and dragged himself to the camp-chest. But he became frozen with horror. One egg was broken open. "It breaks out of its shell like a chicken, it does not change into a chrysalis," he thought mechanically. At last his mind cleared and he awoke to the emergency. He sprang to the desk, snatched up his revolver, ran downstairs and out into the street. He saw no trace of the escaped giant insect. Meyer-Maier looked up at the lighted windows of his home. Suddenly the light became dim. "The other eggs"—like a blow came the thought—"the other eggs too have broken." He raced back up the stairs. A deafening buzzing filled the room. He jerked his door open and fired—once, twice, until the magazine was empty—the room was silent. Through the window he saw

three silhouettes sweeping high across the night-sky and disappearing in the direction of the great woods in the West. In the chest there lay the four broken giant eggs . . .

A Call for His Colleague

Meyer-Maier sank upon a chair. "It's against all logic," he thought, and glanced at the empty revolver in his hand. "My delirium has taken wings and crawled out of the egg. What shall I do? Shall I call the police? They will send me to an alienist! Keep quiet about it? Look for the creatures? I'll call up my colleague, Schmidt-Schmitt!" He dragged himself to the telephone and got a connection. Schmidt-Schmitt was at home! "This is Meyer-Maier," sounded a tired voice. "You must come at once!"

"What's the trouble?" asked Schmidt-Schmitt.

"My African giant eggs have burst," lisped Meyer-Maier with a failing voice. "You must come at once!"

"Your nerves are out of order," answered Schmidt-Schmitt. Have you still got the creatures?"

"They've gone," whispered Meyer-Maier,—he thought he would collapse,—“flew out of the window.”

"There, there," laughed Schmidt-Schmitt. "Now, we are getting to the truth—of course they aren't there. Anyhow, I'll come over. Meanwhile take a cognac and put on a cold pack."

"Take your car, and say nothing about what I told you."

Professor Meyer-Maier hung up the receiver.

It was incredible. He pressed his hand to his forehead. If the empty shells were not irrefutable evidence, he would

have been inclined to think of hallucinations.

He helped himself to some brandy and after the second glass he felt better. "I wish Professor Schmidt-Schmitt would come. He ought to be here by now. He will have an explanation and will help me to get myself in hand again. The day of ghosts and miracles is long past. But why isn't he here? He ought to have come by this time."

Meyer-Maier looked out of the window. A car came tearing through the dark street and stopped with squeaking brakes in front of Meyer-Maier's residence. A form jumped out like an india rubber ball, ran up the steps, burst into Meyer-Maier's study, and collapsed into a chair.

"How awful," he gasped.

"It seems to me, you are even more excited over it than I," said Professor Meyer-Maier dispiritedly while he watched his shaking friend.

"Absolutely terrible" Professor Schmidt-Schmitt wiped his forehead with a silk handkerchief. "You were not suffering from nerves, you had no hallucinations. Just now I saw a fly-creature as large as a heifer falling upon a horse. The monster grew big and heavy, while the horse collapsed and the fly flew away. I examined the horse. Its veins and arteries were empty. Not a drop of blood was left in its body. The driver fainted with fright and has not come to yet. It is a world catastrophe."

Notifying the Police

"We must notify the police at once."

A quick telephone connection was obtained. The police Lieutenant in charge himself answered.

"This is Professor Meyer-Maier talking! Please believe what I am going to

tell you. I am neither drunk nor crazy. Four poisonous gigantic flies, as large as horses are at large in the city. They must be destroyed at all costs."

"What are you trying to do? Kid me?" the lieutenant came back in an angry voice.

"Believe me—for God's sake," yelled Meyer-Maier, reaching the end of his nervous strength.

"Hold the wire." The Lieutenant turned to the desk of the sergeant. "What is up now?"

"A cab driver has been here who says that his horse was killed by a gigantic bird on Karlstrasse."

"Get the men of the second platoon ready for immediate action" he ordered the sergeant, and turned back to the telephone. "Hello Professor! Are you still there? Please come over as quickly as possible. What you told me is true. One of these giant insects has been seen."

Professor Meyer-Maier hung up. He loaded his revolver and put a Browning pistol into his colleague's hand. "Is your car still downstairs?"

"Yes I took the little limousine."

"Excellent—then the monster cannot attack us." They rushed on through the night.

"What can happen now?" inquired Professor Schmidt-Schmitt.

"These giant flies may propagate and multiply in the manner of the housefly. And in that case, due to their strength and poisonous qualities," continued Professor Meyer-Maier, the whole human race will perish in a few weeks. When they crept from the shell they were as large as dogs. They grew to the size of a horse within an hour. God knows what will happen next. Let us hope and pray that we will be able to find and kill the four flies and destroy the eggs which they

have laid in the meantime, within fourteen days."

The car came to a stop in front of the Police Station. A policeman armed with steel helmet and hand trench bombs swinging from his belt tore open the limousine door. The lieutenant hastened out and conducted the scientists into the station house.

"Any more news?" inquired Meyer-Maier.

"The West Precinct station just called up. One of their patrolmen saw a giant animal fly over the Teutoburger Forest. Luckily we had war tanks near there which immediately set out in search of the creature."

The telephone-bell rang. The lieutenant rushed to the phone.

"Central Police Station."

"East Station talking. Report comes from Lake Wieler, that a gigantic fly has attacked two motor boats."

"Put small trench mortars on the police-boat and go out on the lake. Shoot when the beast gets near you."

The door of the Station-House opened and the city commissioner entered. "I have just heard some fabulous stories," he said, and approached the visitors. "Professor Meyer-Maier? Major Pritzel-Witzell! Can you explain all this?"

"I brought home with me four large eggs from my African expedition, for examination. Tonight these eggs broke open. Four great flies came out—a sort of tse-tse fly, such as is found on Lake Tanganyika. The creatures escaped through the window and we must make every endeavor to kill them at once."

The telephone bell rang as if possessed.

"This is the Central Broadcasting Station. A giant bird has been caught

in the high voltage lines. It has fallen down and lies on the street."

"Close the street at once." The major took up the instrument. "Call up the Second Company. Let all four flying companies go off with munition and gasoline for three days. Come with me my friends, we will get at least one of them!"

An armored automobile came tearing along at a frightful speed. "We appreciate your foresight, Major," said Meyer-Maier, as they stepped into the steel-armored machine.

One of the Giant Flies Is Electrocuted

Although it was five o'clock in the morning, the square in front of the broadcasting station was black with people. The police kept a space clear in the center, where monstrously large and ugly, lay the dead giant fly. Its wings were burnt, its proboscis extended, while the legs, with their claws, were drawn up against the body. The abdomen was a great ball, full of bright red liquid. "That is certainly the creature that killed the horse," said Schmidt-Schmitt, and pointed at the thick abdomen. He then walked around the creature. "*Glossina palpalis*. A monstrous tse-tse fly."

"Will you please send the monster to the zoological laboratory?" The major nodded assent. The firemen, prepared for service, pushed poles under the insect and tried to lift it up from the ground. Out of the air came a droning sound. An airplane squadron dropped out of the clouds and again disappeared. A bright body with vibrating wings flew across the sky. The airplanes dropped on it. The noise of the machine-guns started. The bright body fell in a spiral course to the ground. Crying and screaming, the

people fled from the street and crowded into the houses. They couldn't tell where the insect would fall and they were afraid of their heads. The street was empty in an instant. The body of the monster fell directly in front of the armored car and lay there, stiff. In its fall it carried away a lot of aerial cable and now it lay on the pavement as if caught in a net, the head torn by the machine gun bullets. It looked like a strange gleaming cactus.

"Take me to my home, Major," groaned Meyer-Maier. "I can't stand it any longer. The excitement is too much for me."

In the Hospital

The armored car started noisily into motion. Meyer-Maier fell from the seat, senseless, upon the floor of the tonneau. When he came to himself, he lay in a strange bed. His gaze fell upon a bell which swung to and fro above his face. In his head there was a humming like an airplane motor. He made no attempt, even to think. His finger pressed the push-button and he never released it until half-a-dozen attendants came rushing into the room. One figure stood out in dark colors, in the group of white-clad interns. It was his colleague, Schmidt-Schmitt.

"You're awake?" said he, and stepped to his bed. "How are you feeling?"

"My head is buzzing as if there were a swarm of hornets living in it. How many hours have I lain here?"

"Hours?" Schmidt-Schmitt dwelt upon the word. "Today is the fifteenth day that you are lying in Professor Stiebling's sanatorium. It was a difficult case. You always woke up at meal-time and without saying a word, went to sleep again."

"Fifteen days!" cried Meyer-Maier

excitedly. "And the insects? Have they been killed?"

"I'll tell you the whole story when you are well again," said Schmidt-Schmitt, quieting him. "Lie as you are, quietly—any excitement may hurt you."

"They must not come into the room!" he screamed out to an excited messenger, who breathlessly pulled the door open.

"Professor!—" the man was in deadly fear—"the Central Police station has given out the news that a swarm of giant flies are descending upon the city."

"Barricade all windows at once!"

"You wasted precious time," screamed Meyer-Maier, and jumped out of the bed. "Let me go to my house. I must solve the riddle as to how to get at the insects. Don't touch me," he raved. He snatched a coat from the rack, ran out of the house, and jumped into Schmidt-Schmitt's automobile which stood at the gate, and went like the wind, to his home. The door of his house was ajar. He rushed up four flights and in delirious haste rushed into his workroom. The telephone bell rang.

The Danger Is Over

Meyer-Maier snatched up the receiver. He got the consoling message from the city police-commissioner: "The danger is over, Professor. Our air-squadron has destroyed the swarm with a cloud of poison-gas. Only two of the insects escaped death. These we have caught in a net and are taking them to the zoological gardens."

"And if they have left eggs behind them?"

"We are going to search the woods systematically and will inject Lysol into

any eggs we find. I think that will help," laughed the Major. "Shall I send some of them to your for examination?"

"No," cried Meyer-Maier in fright. "Keep them off my neck."

He sat down at his work-table. There seemed a vicious smile on the face of the transfixed dead tse-tse fly. "You frightful ghost," murmured the professor with pallid lips, and threw a book on the insect. His head was in a daze. He tried his best to think clearly. An axiom of science came to him: if the flies are as large as elephants, they can only propagate as fast as elephants do. They can't have a million young ones, but only a few. "I can't be wrong," he murmured. "I'll look up the confirmation."

He took up the telephone and called the city Commissioner. "Major, how many insects were in the swarm?"

"Thirteen. Eleven are dead. The other two will never escape alive. They are fed up with the poison-gas."

"Thank you." Meyer-Maier hung up the receiver. "Very well," he murmured, "now there can be no question of any danger, for each fly can only lay three for four eggs at once,—not a million."

An immense weariness overcame him. He went into his bed-room and fell exhausted on his bed. "It is well that there is a supreme wisdom which controls the laws of nature. Otherwise the world would be subject to the strangest surprises." He thought of the monsters and crept anxiously under the bed-clothes. "I'll entrust Schmidt-Schmitt with the investigation of the creature phenomenon, I simply can't stand further excitement."

And sleep spread the mantle of well-deserved quiet over him.

The End

THE MURGATROYD EXPERIMENT

By CAPTAIN S.P. MEEK U.S.A.

Illustrated by FRANK R. PAUL

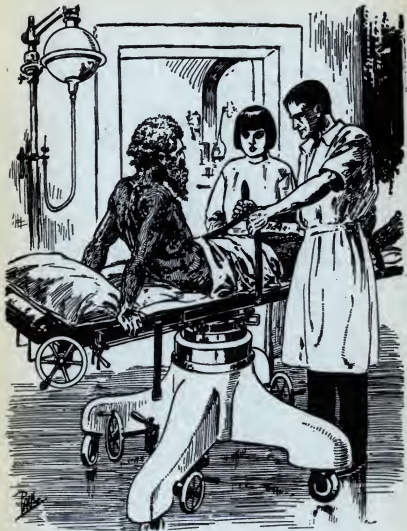
An overly dedicated scientist and human "subjects" add up to an experiment to solve the food supply for an overcrowded world by changing man into a creature capable of synthesizing nourishment from air, water, soil and sunlight! The result? A biological travesty and near tragedy for mankind when the creatures, neither animal or plant, begin to feed in one of the bloodiest population "explosions."

NOW that the genius of Anderson has succeeded in reproducing, on a practical scale, the epoch making experiments of Huddleston on releasing the internal energy of the atom and has made the large scale transformation of matter into pure energy of such a character as to be readily available for the use of mankind and a practical matter, the danger of starvation is removed from the world—or at least indefinitely postponed. Mankind can sit back in peace, assured of a food supply for centuries to come. The only problem of limitation of population that need be considered now is that of finding dwelling space. Since science has achieved the goal toward which all the feverish activity and endless experiments of the world's laboratories have been directed for the last fifty years, it

is interesting to briefly consider the history of the last two hundred years and to take note of some of the abortive attempts that were made to solve the problem of food supply. Perhaps the most interesting are the sensational experiments of Doctor Murgatroyd, which for a time threatened to destroy, or at least, to radically change, the nature of all animal life on the planet.

Most of my readers are familiar, through reading, with the vain attempts made to assure universal peace to the world after the great conflict of 1914-1918. The statesmen of the world assembled at Versailles and vainly tried to formulate a league of nations that would prevent future bloodshed. They did their work well for that day and it was only the fact that the world was not yet ready to renounce warfare

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that prevented their attempts from being successful. An era of more or less good feeling was established and the nations of the West were transformed from armed camps into a state of semi-peacefulness. The great statesmanship and the wonderful ability of Secretary of State Kellogg of the United States succeeded in putting into effect a system of multilateral treaties outlawing war between most of the civilized nations. The age-old antipathy between France and Germany was the hardest to quench, but the effort of Secretary Kellogg, aided by the tireless energy of Secretary of Foreign Relations Hughes, were at last crowned with success and the nations of the West assembled in solemn conclave in 1936 and ratified the great treaty that took the armed forces of the world from the control of the individual nations and placed them under the control of a Senate of Nations, changing their status from that of national protective agencies to that of a huge international police force. Even Russia joined in the movement and an era of peace followed, that allowed greater advance to be made in the realms of science and human relationships during the next three decades than had been made in the preceding thirty centuries. So engrossed with the pursuits of peace was the western world, that no one noticed the tremendous military preparations nor the equally tremendous population increase that was going on in the Chino-Japanese Empire and the storm of war that overtook the world in 1967 came as a rude surprise to the west. It was a war of white against color; of the science of the west against the man power of the east and south. There is no need to trace in detail the fortunes of the two great combatants. For eleven years, a ruthless war of extermina-

tion was waged and it is estimated that over a billion lives were sacrificed. The east suffered most heavily at first, but as their manpower was reduced, they adopted western science and the conflict developed into a deadlock with no prospect of its being broken.

In 1978, two prophets arose in the east and began to preach the doctrines of peace. Chang T'sen Lo paved the way for final peace, but paid the last great penalty at the hands of his war-mad countrymen, Katar Singh, his disciple and successor, took up the work where Chang left off and was successful in his efforts.

A sudden hatred of war swept over Africa and the Orient and since the primary cause of the conflict, the overpopulation of the world had been removed by the high mortality of the conflict, the weary world was glad to accept his teaching and in 1980, the nations laid aside their arms and peace again reigned. The lesson that the world had learned was well learned and a universal congress of mankind wiped out all international boundary lines and put all government in the hands of an inter-racial committee, who governed in the name of all mankind. The immediate result of this action was an enormous and unprecedented increase in population. For half a century, no alarm was felt at this and the world was delighted at the fact. By 2030, the population of the world had grown to such an extent that it was found necessary to limit somewhat the consumption of food and some far-sighted economists began to sound a note of warning. They were voices crying in the wilderness for the improvements in agriculture made by Murgatroyd and the success that crowned the efforts of Ram Chunder De to transform energy into matter, thus enabling the huge

power of the tides to be converted into foodstuffs in the laboratory, increasing the food supply of the world at an even pace with the increase of population.

It was not until 2060 that the situation became acute. By that time, the population of the world had grown to the enormous figure of thirty-one billions and the average length of life had increased to one hundred and forty-two years through the development of serum therapy made in the laboratories of Thibet and Norway. It was in that year that the Inter-racial Committee realized that the abolition of war and the practical elimination of disease, those two great population controlling factors had enabled the population to increase to such an extent that the world was not large enough to produce the food supplies needed, even with the conversion of all available energy into matter. The report of the Sub-committee on Science for that year points out the following facts: The entire available energy of our world was being converted into foodstuffs with practically no loss, except that of the energy derived from the sun. This energy was being converted into food by a round about and uneconomical method, namely, through the medium of plant propagation. The two remedies proposed were, first, the release of some of the latent energy that all knew existed, or second, the direct and economical utilization of the energy derived from the sun.

The first method was that recommended by the Sub-committee and the leading scientists of the world were assigned to the problem and every assistance was given them for its solution. There were a number of scientists who dissented from the views of the Sub-

committee and proposed the other solution. Among these was Doctor Fabian Laurent Murgatroyd.

Doctor Murgatroyd's daughter, Eileen, and I had been classmates at the University of Hawaii, several years before and had kept in close touch with one another since our graduation. She had been a student of physiological chemistry and plant biology while I had specialized in physical chemistry and our subsequent work had led us into widely different fields. We were often opponents in matters of science, but were personally the best of friends and had a great mutual respect for each other's scientific ability. The intimacy, in fact, was giving promise of ripening into a deeper feeling than friendship, when the needs of mankind rudely interrupted. At the time that the experiments for the release of the latent energy of matter were initiated on a large scale, I was called from my home in Hawaii to take charge of the laboratory at Berne, Switzerland, and was made a consulting member of the Sub-committee on Science. Consequently, I was present when Doctor Murgatroyd presented his case before the Sub-committee.

Murgatroyd's work in the field of plant biology was sufficient to warrant him a respectful hearing, even had not the magnetic personality of the man been sufficient to demand what was freely given to his scientific attainments. The Sub-committee listened carefully to the words of the huge figure that stood before them, punctuating his well-chosen phrases with energetic shakes of his leonine head crowned with a mop of shaggy grey hair.

"The Committee knows very well the history of my work," he began, "and my knowledge of chlorophyll.

The only method we have of converting the energy received from the sun is through the use of that substance. Chlorophyll, of course, is the green coloring matter of plants which has the peculiar property of transforming carbon dioxide gas, water, and the sun's energy, into starches and sugars which are available for assimilation by the animal world. All of our food supplies, save those produced in the laboratory by the direct conversion of energy into matter, are derived from this source. The method is round about and very uneconomical. First the energy must be converted into sugars and starches with the waste attendant on all forms of metabolism and then it must be reconverted into animal tissues with another large percentage of waste. Sometimes it is allowed to go through still another step, as occurs when we feed plants to animals and then eat the products of animal life in the form of eggs, milk and meat. In such a case, not over one-half of one percent of the initial energy taken from the sun ever goes into animal tissue. It is my hope to remedy this situation and eliminate this waste.

"Chlorophyll is a very complex substance. The Sub-committee is familiar with the work that I did some thirty years ago, when I revolutionized plant husbandry by the production of super-chlorophyll-bearing plants, thus enabling five crops of grain a year to be raised on land that formerly produced but one crop. This was done by substituting for some of the nitrogen atoms in normal chlorophyll, an atom of radium, and by decreasing by four, the number of carbon atoms with corresponding decreases in the oxygen and hydrogen atoms. The result was a substance which is five times as efficient as chlorophyll and which differs

from hematin in the location of the double bonds connecting some of the atoms. For the benefit of the members of the Press, I will state that hematin is one of the constituents of hemoglobin, the red coloring matter of the blood which enables the carbon dioxide produced in the body to be eliminated by way of the lungs. Hemoglobin consists of hematin and of globin, a basic protein.

"It is my opinion that it is possible to replace the hematin of the blood by superchlorophyll or some related substance and thus enable mankind to utilize directly the energy derived from the sun. Should my theory be correct, mankind can subsist on water and a small amount of dissolved mineral matter with the aid of sunlight. Agriculture will be unnecessary and the enormous space devoted to the raising of plants can be utilized for dwelling space. The food supply of the world will be increased by over five thousand percent and the danger of world-wide starvation removed. The idea of releasing the free energy of atoms is idealistic. It has been attempted for the last century and a half without material success. It is improbable that the problem can be solved in time to be of any value in the impending crisis. On the other hand, success has crowned my efforts along the lines of plant biology and I believe that in five years I can solve my problem. I therefore request authority from the Sub-committee to work on my theory and ask for space, funds and assistants to carry on the work."

The Sub-committee deliberated for some time on Doctor Murgatroyd's request before the Chairman announced the decision.

"Doctor Murgatroyd," he said, "the

Sub-committee has considered your ideas with great care. We feel that any attempt to alter the physical characteristics of mankind is an experiment fraught with the gravest danger to the world. We feel that the release of latent energy is the only practical solution of the problem with which we are faced. Nevertheless, in view of your great contributions to the welfare of the world and your great and unquestioned attainments in the field of science, we do not feel that we can, in justice to mankind, refuse to authorize your experiments. We have, therefore, allotted to you the Island of Kahoolawe, in the Hawaiian group, for your work and we authorize you to draw on the central pool for the needed supplies and assistants. We have also assigned, as observer for the Sub-committee, Doctor Harold Wilbur, who we understand is an intimate friend of yours. Doctor Wilbur will stand relieved from the laboratory at Berne and will be at your service at once."

The meeting turned to the consideration of other matters and Murgatroyd and I left the laboratory together.

"This is fine, Harry," he exclaimed. "They couldn't have given me an observer that would have been more welcome, and Eileen will be delighted. She will be my chief assistant. We have often disagreed in the past and I doubt if you look with favor on my idea now, but I know that your reports will be impartial and that your opposing viewpoint will stimulate us and help my work immensely. Come up to my hotel and I'll go over my plans with you."

When we were seated in the luxurious suite that had been placed at Doctor Murgatroyd's disposal by the

Sub-committee when it had agreed to hear his views, he went further into the matter.

"I might as well tell you at the start, Harry," he said, "that Eileen and I have made a number of illicit experiments along this line before I brought the matter up before the Sub-committee. You needn't look so horrified. We did not neglect our assigned work and we performed these under conditions that assured us absolute control and gave no chance to turn loose on the world another plague like Shird Khan turned loose a generation ago, before all experimental work was placed under strict control. The point is that we have already demonstrated the practicability of my idea. We managed to substitute a superchlorophyll derivative for the hematin in the blood of a frog. He lived for twenty days and amply demonstrated his ability to convert the sun's rays into tissue directly. I am all ready to experiment on higher forms."

"What are you going to use, apes?" I asked.

"Human defectives," was his startling rejoinder.

"Impossible!" I ejaculated. The Sub-committee will never allow it. All experiments must be successfully tried on lower forms before humans can be used."

"They gave me *carte blanche*," he replied grimly. "Of course, I will try it on lower warm-blooded forms first, but I will be ready for the final stages in a few months, I think. Now here is a list of the assistants that I want besides Eileen. Will you see that they are properly requisitioned? It will help me a great deal if you will take care of that, while I get together the equipment that we need."

There was no resisting the dynamic

personality of the man and I assembled the assistants that he desired and helped him assemble the supplies and equipment that he needed, including thirty human defectives from the home at Alexandria. We landed on Kahoowale on January 10, 2061, ready for the great experiment.

The work of erecting the needed buildings and setting up the heavier equipment had already been done by the construction forces sent ahead and when we arrived, there was nothing to do but to move in and start our work.

I will not burden my readers with the details of the endless experiments which Murgatroyd and his assistants carried out. They are reported in detail in the volumes of the reports of the Sub-committee on Science for the years 2061, 2062 and 2063. Despite the optimism of the Doctor and herculean labors of both himself and his assistants, there were serious and unexpected setbacks. The methods which had been crowned with instant success when tried on reptiles, failed completely when tried on warm-blooded animals. Countless rabbits, guinea pigs and rats were sacrificed in abortive experiments and Murgatroyd labored for hours in his private laboratory evolving new and weird compounds related to the hematin and chlorophyll groups. The trouble seemed to be to get the chlorophyll to combine with globin, the basic protein of the red blood corpuscles.

My duties were light and, while I did my best to help out, my lack of knowledge of plant biology and my real disbelief in the practicability of the experiments, were handicaps that made me almost useless. Eileen was of great assistance to her father, but when he noticed that her health was failing under the strain of unremitting work,

he remonstrated and at last laid down the law and insisted that she rest at least two days a week and limit her working hours on the other five to ten hours a day. Eileen protested, but her father was firm and as a result we had a good deal of spare time to spend together.

The beautiful Hawaiian nights wove their customary magic spell and ere long Eileen and I decided that life without one another was a waste of time and I duly requested her hand from the Doctor. He stroked his leonine head for a moment in deep thought.

"I am inclined to favor your request," he said at length. "So far as I can tell, you are well suited for one another. Your temperamental indexes are close enough to assure harmony and far enough apart to prevent boredom. You mental attainments and developments are such as to make your union especially suitable and your opposing viewpoints on scientific matters will prod each other to do better work. I have only one objection.

"Eileen is essential to my work here and I know of no other observer that the Sub-committee could send who would be as welcome as you are. The regulations regarding marriage require, as you know, that the newly married couple be entirely separated from their parents for a period of adjustment of two years. The loss of both of you would cripple me terribly. For the good of mankind, I feel that you should wait until the successful outcome of my experiments or their definite abandonment.

"You are both well under forty years and have at least a hundred years of life before you, sixty of which will be at full vigor. My work will be over in

five years at the outside. Will you not wait that long?"

Eileen agreed with her father and while our future marriage was an understood thing, the date was indefinitely postponed. With this added incentive for rapid completion of our experiments, I threw myself into them, body and soul, and managed to make myself over into a very able assistant. I arranged my hours of voluntary work to agree with Eileen's and our free hours were spent together, bathing in the warm water of the Pacific or lying around on the sunkissed or moonlit beaches, weaving beautiful plans for our future happiness.

Nearly three years of the five predicted by the Doctor had passed before he awoke me at midnight one night with the light of inspired madness in his eyes.

"Success, Harry!" he shouted in my ear, "I have done it. Come to my laboratory at once!"

I followed him and there in a cage on his table was the weirdest object that I had ever seen. It was a white rabbit, but what a rabbit! The eyes that would normally be pink from the blood showing through the pigmentless iris were a brilliant green and the normal pink of nose, mouth and ears was changed to the same ghastly hue.

"It lives!" cried Murgatroyd, almost beside himself for joy. "It lives, moves and breathes and it is a plant! Observe!"

He took the rabbit from the cage and, puncturing its hide, drew a few drops of liquid from its veins into a test tube and held it to the light. The "blood" was a brilliant green and it did not need the analytical tests that he made to assure me that he had indeed changed the nature of the blood

in the luckless rabbit from that of an animal to that of a plant.

Subsequent experiments with his creation proved the correctness of his theory. The rabbit was indeed a moving plant, able to assimilate water, carbon dioxide and soil matter and transform them into tissue with the aid of the sun's rays. An air of new enthusiasm infected the laboratory and the preliminary stages of cat, dog, monkey and ape were rapidly run through, clearing the way for the great final experiment on human beings. At last the required gamut of experiments had been performed and I radioed the results to the Sub-committee, together with Murgatroyd's request that all assistants, except Eileen, and all other personnel, except myself, be removed from the island and that he be authorized to proceed with his experiments on the human defectives. I indorsed his request and it was duly approved and the laboratories were cleared of all but Murgatroyd, Eileen and myself.

The group of defectives on which the experiments were to be performed were very carefully chosen. There were no mental or moral defectives among them. When it is realized that no one of them had a mental index below 1.7 nor a moral index below 6.9, (it should be borne in mind that the maximum possible rating in each case was 10.0 and that the average mental and moral indexes of all mankind were 1.32648 and 5.49237, respectively, as indicated by the 2060 census), it can be realized that they were really a superior group of men and women. The average physical index, however, was only 2.938, every one having some vital error in his or her physical makeup; either a deficient glandular development or a predisposition to disease that would make death or disability

a practical certainty before even the comparatively young age of sixty was reached. It was, in fact, for this reason that they were chosen. Doctor Murgatroyd was very insistent that the subjects must be well above average mentally and morally and radically deficient as to physical index. He never explained his reasons for this, but in view of the results of his experiments, it seems probable that he had some faint inkling of the possibility of the very results that he obtained.

When we were ready to proceed, as a first step each subject in turn was brought into the laboratory and the object of the experiment and the method of procedure was carefully explained. Each was then asked if he or she was willing to be made a subject of the experiment. They listened carefully and with one exception pronounced themselves more than willing to undergo the treatment. They were an intelligent lot and they had confidence in Doctor Murgatroyd and knew also that the Sub-committee on Science had satisfied themselves that the experiment was needed for the good of mankind. Even should death result, they felt that their lives would have been given up in a good cause. There was one exception, a young man of about fifty, a Russian, who had inherited the virus of revolution from his forebears. He sulkily replied, that as he had been condemned to be murdered, it was immaterial to him how it was done. It was evident that no co-operation could be expected from such a subject and Doctor Murgatroyd radioed the Sub-committee of his refusal to lend willing aid. He was at once instructed not to use him. I might state in passing that when his record was looked up, it was found that he had refused to be used in five experi-

ments prior to this occasion and the Sub-committee, feeling that his attitude constituted a menace to the advancement of mankind, ordered him to be mercifully removed from the world, a sentence which was duly carried out.

When the co-operation of the subject had been secured, he was disrobed and his entire skin carefully sterilized to prevent the possibility of infection tending to prevent the success of the experiment. His mental, moral, physical and temperamental indexes were then taken and checked with the records that we had. When no serious disagreement was found, we were ready to operate.

A vein in the right arm was severed and the two ends attached to glass tubes leading into a reservoir containing a preparation of artificial blood which was able to sustain life for an indefinite period under the proper conditions. Connected to the reservoir was a small pump and the glass receptacle to receive the blood drawn from the subject. After the ends of the vein were attached to the apparatus, the pump was started and the blood gradually drawn from the subject's body and replaced by the synthetic compound above referred to. When this process was completed, the ends of the vein were again joined and the subject warned to remain motionless. (Synthetic blood will preserve life almost indefinitely if it is not broken down by exercise, but if the patient should stir around much while his veins are filled with it, death will soon ensue.)

The removal of the blood and the care of the subject were the parts of the experiment which I performed. When my part was done, Eileen and the Doctor took the blood which had been drawn from the subject and sub-

jected it to a complete breaking down process as far as the red corpuscles went. The hematin was then removed and by the action of rays of various wavelengths and intensities transformed into hemaphyll, as Doctor Murgatroyd called his new compound. The hemaphyll was restored to the balance of the blood, and the corpuscles were rebuilt in the serum and the resultant bright green liquid returned to the subject's veins by means of the pumping apparatus with which the blood had been removed. The subject was kept in a state of suspended animation for five days to allow certain internal changes to go on in the body and was then restored to consciousness.

The first subject that we worked on was a beautiful young girl, not over thirty years old. Her name was Hilda Erickson and she was one of the few specimens of the pure blonde type left in the world, as the blonde type had proved very unresistant to disease and consequently had become nearly extinct. Her hair was a pale golden, her eyes blue, and her skin of a peculiar rich pinkness that would have warned a scientist, even without a glance at her record card, that she was non-resistant to tuberculosis. She was rather pale with excitement when she was brought in and her coral lips stood out like bloodstains against the white of her face. As the blood was drawn from her body and the colorless synthetic fluid pumped into her veins, the color faded from her body and lips until she was chalk white all over, her lips merging into the cheeks almost without perceptible change of color. She looked like a beautiful marble statue and I patted her hand gently, feeling that it was a shame that such ex-

quisite coloring as had been hers was gone from the world forever.

For nearly an hour, Eileen and her father labored over the blood. At last they bore the vessel containing it up to the side of the table where our subject reclined and motioned me to reconnect the pump with her veins. I did so and as the motor revolved slowly, the synthetic blood, tinged a very faint pink, was withdrawn and the green fluid pumped in. Gradually color was restored to the marble-like body and the parting line between the lips and cheeks began to show again. But what a difference! Gone forever was the coral of those lips, replaced by a vivid green. The rosy flush that had been on her body was changed to a pale green hue, and even the blue of the eyes had a decided green cast. When the last trace of green fluid had vanished from the apparatus, I stopped the pump and hastily joined the parted vein while Eileen attached the anodes and cathodes of a suspended animation machine to her head and feet and turned on the current. The Doctor removed his operating helmet with a sigh.

"I am an old man," he said, "and I am tired. It will be five days before we know whether she will live, and in the meantime, I am going to rest. You children had better do the same."

"Harry," asked Eileen as we sat on the beach that night, "will you love me when I am green like that?"

"Green?" I exclaimed with a start. "What makes you ask such a question?"

"You know that if Dad is successful with the experiment, the Inter-racial Committee will have every one treated that way," she said. "It will mean a saving of ninety-eight percent of food and energy and will mean the saving of mankind. It is a great thing, but I

don't believe that I'll be pretty when I'm green."

Her words brought the situation home to me with a sudden shock. I had been co-operating heartily with the Doctor and had indeed come to think that it would be a tremendous boon to mankind if he succeeded, but it had never occurred to me that it would strike so near home.

"It takes a good while to make the change," I consoled her. "I doubt if the world will ever get around to us before we are too old to care much, if we aren't dead by the time they reach us."

"You forget that in anything of this nature, the developer and his assistants must be the first to undergo the treatment," she replied. "If the experiment is a success and I believe that it will be, you and I and Dad will all be green in another two years. Oh, Harry, won't you look funny, green?"

The humor of the idea overcame her and she laughed herself nearly into hysterics. At the thought of myself green as grass and eating sand and loam for a dinner, I was forced to join in her mirth, although the idea of desecrating her rich beauty as that poor girl's was desecrated that afternoon struck a jarring chord in my mirth.

"I'll make a bargain with you, Harry," said Eileen at last as her laughing fit passed. "I'll love you when you are green, if you'll love me. Really though, it isn't as bad as it sounds. It is all a matter of what we are used to. One green girl in a pink world is hideous, but I dare say our children would consider a pink girl hideous in comparison with the green maidens they will be used to. I'm as tired as Dad was this afternoon. Come on, I'll

race you back to the house and then we must go to bed and get some rest.

The five-day period, during which our subject had to remain in a state of suspended animation, passed slowly enough, but it finally passed and we reassembled in the laboratory. Eileen's hand trembled as she threw the switch that cut off the current. The girl trembled slightly and opened her eyes.

"You may rise now," said the Doctor. "The experiment has been successful and you are quite all right.

The girl sat up with a little difficulty and looked around.

"What is the matter with my eyes?" she asked suddenly. "My skin looks green to me."

"It *is* green," said Eileen with a forced laugh.

"Oh," exclaimed the girl as memory returned. "May I have a mirror, please?"

Eileen handed her a mirror and turned away. Miss Erickson looked long and earnestly at the reflection of her ghastly face and then smiled faintly.

"Will every one look like this soon?" she asked.

"I trust so," replied the Doctor. "How do you feel? Perfectly normal?"

"I feel all right, except that I am rather weak," she replied, "and I have an overpowering desire to go and sit in the sun."

"That is quite natural," said the Doctor. "You see, you now partake more of the nature of a plant than of an animal and an abundance of sunlight is doubtless essential to keep up your vitality. Go out and sit in the sun. No, don't clothe yourself, the sunlight must fall on your skin. Drink plenty of water and should you feel hungry, try eating a little soil. For a time you will wish other food, but

eventually, I believe that the appetite will pass and that you will subsist on soil and the constituents of the atmosphere alone."

Despite her statement that she felt all right, it was evident that Miss Erickson was pitifully weak and I slipped my arm around her and half led and half carried her out into the sunlight.

"How good it feels," she murmured as she threw herself down on the green turf before the door. "Let me rest a little and I think that I'll be able to think more clearly. Things seem rather confused right now. I suppose that I must be acquiring a plant's point of view of the world."

I left her and returned to the laboratory and reported her words to the Doctor.

"I presume that she is right," he said reflectively. "It might be a good plan to observe her for a few days before we go on with our experiments. Still, I don't want to delay any more than I have to and she seems to be perfectly normal. We had better get on with our work; the accumulated impressions of the whole group will be of much more value than any observations that could be made on an isolated case. Eileen, you and I will put on our operating hoods, while Harry gets the next subject ready."

It was a long and arduous task to transmute the blood of the twenty-eight other subjects, but it was done in time and the green bodies were laid out in a row in the laboratory in a state of suspended animation. The last one to be operated on was a Doctor Holmburg, late Professor of Botany at the University of Teheran. His mental index was 4.29 and he was altogether a superior specimen. He was less than

forty and just entering the prime of life, but unfortunately a cardiac weakness had developed that limited his years of life to fifty at a maximum and had caused him to be placed on the defective list, lest he should procreate and transmit his weakness to his posterity. He conversed with us very cheerfully as he prepared himself for the operation.

"It is an interesting experiment," he said with enthusiasm, "and I am very glad to be able to assist in it. The idea of having my nature changed to that of a plant is of the greatest scientific interest to me. I trust that I will be able to use the experiment to solve some of the perplexing problems of botany that are before the world at the present time."

"I appreciate very much your cordial co-operation," replied Doctor Murgatroyd. "It will be a great benefit to us to have as highly trained and intelligent an observer as you are among our subjects, and I am sure that your assistance will be of the greatest value. Now will you assume a reclining position so that Doctor Wilbur may draw your blood?"

During the five days that elapsed before we could start restoring the bulk of our subjects to consciousness, Doctor Murgatroyd tried in vain to fathom the mental processes of Miss Erickson. The physical phenomena which she exhibited are easily cataloged. She could assimilate soil and could easily subsist on a diet of soil, air and water with the aid of plenty of sunlight, but strange to say, she preferred a meat diet and would rather have it raw than cooked. Her mentality was not at all impaired as shown by the daily index readings which we took; in fact, it rose slightly, but her moral index showed a rapid downward

trend. It was evident that profound changes were going on in her physical structure, for when we tried to take a physical index reading, the figures we obtained were absolutely meaningless. The Doctor puzzled a good deal over these facts.

"I will be very glad when Professor Holmburg is restored to wakefulness," he said after an exhausting half hour with Miss Erickson. "I believe that he will be able to shed some light on the matter."

"I hope so," replied Eileen, with a shudder. "It is dreadful to think of that poor girl's moral fibre going to pieces daily, while we stand by, powerless to help her."

"Something must be sacrificed for the cause of science," replied the Doctor sententiously.

The days of waiting passed and one by one we restored our twenty-eight subjects to consciousness and led them outside to lie in the sun and recuperate from the strain of five days of suspended metabolism. Professor Holmburg was, of course, the last to be revived. When the current was snapped off, he sat up and looked around in a semi-dazed condition. His eye fell on Doctor Murgatroyd and he smiled.

"When are you going to start, Doctor?" he asked.

Doctor Murgatroyd silently handed him a mirror. He took it and looked at his reflection in a puzzled manner, rubbed his eyes and looked again. Suddenly a realization of his condition passed over him and he struggled to his feet.

"It has been a success," he cried jubilantly, wringing Doctor Murgatroyd by the hand. "Let me congratulate you on the successful outcome of the most daring experiment of the age. Are the others all right?"

"Perfectly all right," replied the Doctor. "I cannot tell you how much relieved I am to have your assistance in interpreting the results. The first subject has given us some uneasiness, but with your help, I hope soon to understand the changes that she has undergone more thoroughly."

"Just what seems to be the trouble?" asked Professor Holmburg.

"You are hardly in shape to go into details just now, Professor. You had better go out and lie in the sun for a few hours. Later we will discuss it and I think that you may be able to help me very materially. Will you join us at my bungalow this evening and help me outline our further plans?"

After supper we sat on the screened porch surrounding the bungalow, which had been constructed for Doctor Murgatroyd's use during his stay at Kahoowale, listening to the murmur of the waves lapping the near-by shore. The Doctor was sitting silent and motionless, apparently in a state of semi-stupor resulting from the stirring events of the day. Eileen and I were talking in an undertone, planning our future home which we had decided to locate on my estate in Maui, just beyond the Alalakeiki channel which lay before us. There was a step on the walk outside and a cheerful voice sounded out of the darkness.

"May I come in?"

"Come in, Professor Holmburg," cried the Doctor as he sprang to his feet and opened the door. "We were all anxiously awaiting your arrival."

"I fancy so," he replied with a laugh as he entered, "especially Miss Murgatroyd and Doctor Wilbur. I had no intention of eavesdropping, but sound carries well on a dark night like

this and I couldn't help overhearing a little as I approached."

His cheerful laugh rang out again and Doctor Murgatroyd hastened to turn on the lights. Professor Holmburg was faultlessly dressed in white flannels and but for his green cast of countenance, which was not nearly as evident under the artificial light as it had been during the day, he appeared no different from any other man of his age and station in life. For a few moments we talked lightly of the happenings in the world and the beauties of our island home. Presently his face grew grave and he turned to the Doctor.

"Doctor Murgatroyd," he said, "may I see the record cards of Miss Erickson, your first patient? I had quite a talk with her this afternoon, but before I venture any opinion, I wish to learn all that I can about her. Have you index readings both before and after the operation?"

"I have the index cards for her whole life," replied the Doctor. "Come into the sitting room. I have brought all the records up here in the hope that you would feel well enough to go over them with us."

We adjourned into the sitting room and the records of Miss Erickson were spread out before Professor Holmburg. He perused them carefully, reading over twice the index records of the case for the week preceding the operation and all the records made since that time. When he had finished, he sat for a while in deep thought.

"These records bear out my observations," he said at length. "I am glad to have exact records to study before I speak, as it was possible that the changes which I observed had taken place in myself instead of in her. Miss

Erickson has not suffered mentally at all by the change in her blood; in fact, she has improved slightly. Her physical readings are meaningless and her temperamental indices, while variable, average up fairly close before and after. Your instruments, however, bear out the profound change which I noticed today, namely, that her moral tone is markedly lowered."

"Did you notice it so soon?" asked Eileen in surprise.

"I couldn't help but notice it," he replied, "it was thrust on my attention. Your records show that she has sought to hide it from you, but to me, she openly displayed a moral degradation that would make me think that her index was even lower than you have recorded, although it is as low as the average moral defective by your readings. She apparently thought that I was on a moral level with her and she tried the crudest kind of seduction and uttered several palpable falsehoods without reason. It is a peculiar thing. Have any of the other subjects shown the same tendencies?"

"Enough time has not elapsed for me to determine," replied Doctor Murgatroyd. "Harry and I are going to take a set of readings in the morning. We would appreciate it very much if you would attend and help us."

"I will be more than delighted," he replied. "I will watch my own readings with especial interest. Since there is nothing more that we can do tonight, I will not trespass longer on your time. I will go back to the dormitory and continue my observations."

"Stay and we'll play cards," said Eileen. "We all need some relaxation, and I'll try to get some refreshments together later on."

"That is very kind of you and I will

be delighted to remain for a while," he replied, "but as for refreshments for me, a handful of good top-soil will be a full meal, thanks to your father's genius."

Despite his predictions, when Eileen served the refreshments, he did full justice to the cold meat that formed part of it. He ate very sparingly of the vegetable and grain components of the meal.

"It is a peculiar thing," he said meditatively, "vegetables and plant products seem to be very repugnant to me as articles of diet. I presume that it is because I am partly plant myself now. I seem to crave meat and I am ashamed to confess that it would suit me best raw."

Eileen, the Doctor and I exchanged significant glances, but said nothing. Shortly afterwards Professor Holmburg excused himself and returned to the dormitory, where all the subjects were quartered.

Next morning in the laboratory, he was of great aid to us in the prosecution of our work. The results that we obtained were rather indeterminate and we soon abandoned our labors for the day. A busy week passed, the four of us working ten hours a day, taking index readings and cataloging them and observing our subjects. At night we would confer over our results and plan our next day's work.

"It is time that we paused and reviewed our data to date," said Doctor Murgatroyd one evening. "Professor Holmburg, you are most vitally interested; suppose you give us your ideas first."

"I am glad to do so," he replied. "My case is almost an exact parallel of the others and by detailing the

changes that I have witnessed in myself, we may arrive at a clearer idea of the changes that are going on than we should if we tried to digest the data on all the cases. To begin with, my physical nature has so completely changed that the index readings made by Dourget's method have no meaning, and so far we have devised no new method that tells us anything. Temperamentally I have changed from a steady reading of 7-c-xx-4-r to a series of readings that vary quite a little but average about my previous reading. I have grave doubts of the accuracy of these readings. Mentally, I have shown a steady improvement, totaling altogether .0621, a tremendous increase, equal almost to a year of mental growth in only nine days, an unprecedented happening in the annals of science. Morally, however, I have dropped from 8.963, an unusually high figure, to 5.42, slightly below the average level of all mankind.

"So much for scientific figures. Now for my feelings. Physically I feel in splendid health, but I have a great desire for sunlight, a perfectly natural craving when you consider that my blood contains hemaphyll instead of hematin and that sunlight is necessary for my metabolism. I can subsist on water and air and a small amount of mineral matter, but I have a craving for meat, raw meat. The same is evident in all of our subjects. The only logical conclusion to draw is that we belong to the order of meat-eating plants, characterized by the flycatcher of Madagascar.

"The most striking change has been in my moral feelings, if I may call them so. On the first day that I was restored to consciousness, I was acutely embarrassed by the presence of Miss Murgatroyd when I was unclothed,

although my scientific training allowed me to overcome it. To-day, I would feel little, if any, embarrassment. I feel strong tendencies at times toward prevarication—and to-day as I was leaving the laboratory, I secreted a knife in my garments and was about to take it with me, when I suddenly realized what I was doing. It is evident that my mental power has so far held my moral balance true, but there is no telling when it may tip.

"You have not been in the dormitories lately. It is advisable that you do not go. Every one of your subjects has become a moral degenerate. The males and females have invaded each others' sections of the building and thievery, lying and promiscuity are the order of the day. Doctor Murgatroyd, your experiments have been a failure. You have solved the problem of food supply in an admirable manner, and your method is one that would retain or increase the mentality of the world, but it would change mankind into a race of degenerates that would be below the status of the savage tribes of the nineteenth century.

"The question that now arises is this. Can you reverse your process and change these unfortunate plants back to human beings? If so, I would advise starting on it at once, before they get beyond your control."

"I have never experimented along the lines that you suggest," replied Doctor Murgatroyd, as Eileen and I nodded agreement with the statements of Professor Holmburg. "I am inclined to agree with you in everything that you have said, yet it is a hard thing to give up the dreams of half a life-time. Are you sure that you are right in all of your observations?"

"I am morally certain; perhaps I

had better say that I am mentally certain; my morality is not to be depended on. Things are even worse than I have told you. Your subjects are rabid meat eaters. To-day Miss Erickson, who is the farthest along the decline we are all on, caught a young mongoose and eagerly tore its throat and drank the blood and then devoured the body. Two males tried to take it from her, but she fought them off with snarls like an enraged cat. I confess with horror that I was strongly tempted to join them in their attempt at robbery.

"Worse even than that, there is some plot going on in the dormitory that I have not been able to fathom. They do not entirely trust me, due to my intimacy with you. I most strongly advise that you start experiments tomorrow leading to the reversal of your process and if you are not soon successful, I would recommend that I and the other unfortunate results of your tests be mercifully eliminated. In the meantime, I will, to a certain extent, cease my intimacy with you and will try to get at the bottom of the plot that I am sure is brewing. Will you not radio to-night and have your assistants returned in the morning from Oahu?"

Doctor Murgatroyd rose and sighed heavily. "I am an old man," he said, "and the wreck of my dreams is a bitter blow, but you are right. I will send off the message recalling my force at once."

He left the house and started for the building where our transmitting set and the master receiver were located. In a few minutes we heard his footsteps approaching rapidly. We jumped to our feet and met him at the door.

"The transmitting set and the receiver are gone!" he announced.

"Gone!" I ejaculated in surprise.

"Gone," he replied. "Completely gone. Not even a spare vacuum tube is left."

"There is no question as to who is responsible," said Professor Holmburg grimly. "I suspected something of the sort, but thought that it would be delayed. What is your communication schedule?"

"We have none," I replied. "We receive on the general broadcasts and on our own wave from Geneva and Peking, but we have no set sending schedule. It may be several weeks before our silence alarms anyone."

"That is worse than I thought," said the Professor. "Have you any weapons?"

"Weapons?" asked Eileen in alarm.

"You may need them," he said soberly. "I can't tell you what this may mean. Have you any?"

"I have a pistol," I replied, "and I think that there is a shotgun in the laboratory building, but I am not certain. Those are all that are on the island, so far as I know."

"Get your pistol and carry it," he said to me. "The laboratory is a solid building with vitriolene windows and it will stand a long siege from anyone not equipped with disintegrating ray machines. Go there at once and barricade yourselves. I will go out and see what I can find out and return if I think that I can do any good. If I am not back inside of three days, be careful about letting me in. At the rate my moral fibre has been going, I may not be safe much longer."

He hastened out of the house and with a murmured word of apology, I hastened to my room and put my automatic pistol into my pocket, first

assuring myself that it was fully loaded. On my return, I found Eileen and her father in an argument.

"I really don't think that it is necessary to move tonight," she was saying. "If we wait until morning, we can gather together things that we want and go—"

Her voice trailed off into silence as I entered and I followed the direction of her gaze. Just outside the screen stood one of our subjects, looking into the house with an expression of fiendish hate on his features. The green lips were working avidly and the look of murder was in the eyes that stared into the room. I drew my pistol and taking careful aim, fired. I am a dead shot and the range was short and I would have bet ten years of my life that I struck him square between the eyes. He did not fall as I confidently expected he would, but instead turned and ran at top speed from the house. I leaped to the screen, intending to fire another shot at the retreating figure, but the darkness had already swallowed him up.

The incident stilled Eileen's doubts as to the advisability of an immediate move and we hurriedly gathered up such of our belongings as seemed most essential and prepared to depart. None opposed our departure and we covered half of the four hundred yards that separated us from the laboratory without incident. Then, without warning, the huge floodlights that were arranged to light the entire ground as light as day sprang into full radiance and from all sides, the plant men and women came toward us.

"Good evening," said the Doctor quietly to the first one who approached.

Miss Erickson, for it was she, made no reply but sprang suddenly at him and throwing her arms and legs about

his massive frame, sought his jugular vein with her teeth. I leaped to his assistance and tore her loose from her hold, but by this time others were at hand. I fought myself free for a moment and drew my pistol. Miss Erickson leaped at me and I shot her square between the eyes. She hesitated for only a fraction of a second and then came ahead again. In alarm, I fired the remaining five shots through her body—without effect. As she threw her arms around me, I struck with all my force at the point of her chin. The blow went home true and hurled her back, but the blow that should have knocked out a heavy man had no apparent effect on her and she closed again.

By this time, others were attacking me from the rear and I was pulled down and held helpless. From where I lay I could not see what was happening to the Doctor but I saw that Eileen was down and being held. I made a desperate struggle to go to her assistance, but my assailants were too numerous and I lay quiet for a moment, husbanding my strength for another attempt.

There was a babble of excited talk from the plant men and women and the smell of raw hot blood struck my nostrils. With cries of hunger, my captors released me and dashed toward the spot where the Doctor had been pulled down. I staggered to my feet and ran to Eileen's assistance, but before I had reached her side, her captors had joined mine in the mad rush toward the Doctor. I turned to his assistance, but strong hands gripped me from the rear. I turned to strike but saw in time that it was Professor Holmburg.

"Come," he said quickly. "Doctor Murgatroyd is beyond your help or mine. You and Miss Eileen run for

the laboratory at full speed. I'll try to guard your rear as you go."

A glance toward the Doctor's body showed me the accuracy of Holmburg's statements and I turned to Eileen.

"Come quickly," I gasped. "Your father is dead, but we may save ourselves."

She made no answer, but tried to go to her father. I grasped her by the arm and strove to draw her away. She fought me like a tigress, but Professor Holmburg came to my aid and together we half dragged and half carried her toward the laboratory. We had gone perhaps a hundred yards before our departure was noticed. Then arose a hue and cry behind us and we saw that the plant men and women were in hot pursuit.

"Faster, Professor," I gasped.

I heard his teeth close with a snap and he increased his gait. Eileen had ceased to hold back, but her speed was not equal to that of her pursuers. The start we had obtained, however, proved ample and we reached the laboratory door fully thirty yards ahead of our nearest pursuer.

"Knock me down and then drag me inside the door," muttered the Professor.

I did not realize the purpose of the move, but obediently struck him with my full strength. He staggered and fell and I seized him and dragged him inside the door, closed it and bolted it almost in the face of our nearest pursuer. The Professor sprang lightly to his feet.

"You sure can use your fists, Wilbur," he said with a smile. "Add another to your observations, a blow has no effects after your operation."

"Neither has a pistol bullet," I re-

plied as I snapped on the switch. "Do you think that this place is safe?"

"You have vitriolene windows that will stop anything and that door is good against anything short of a disintegrating ray or heavy artillery," he replied. "I don't think there will be any trouble to-night. Let us join Miss Murgatroyd and take counsel."

"What happened to Dad?" was her first question.

"I am afraid that he is beyond help," replied Holmburg gently. "I can't tell you all the details tonight, but my warning came too late. The flesh appetite developed faster than I thought it would and he has paid the penalty for trying to better nature. Miss Murgatroyd, you must restrain your grief for the present. Don't you realize that you have turned loose a grave menace on the world? These creatures you have created are wholly devoid of any moral sense; they are flesh eaters and no ordinary means will kill them. A pistol is useless, as Doctor Wilbur learned to-night. We are cut off from communication with the rest of the world and we must solve the problem and save mankind without assistance."

"They aren't all degenerates," I broke in. "You saved both of us to-night."

"So far my superior mind has enabled me to realize what was happening," he replied, "but before you go to sleep to-night you must either tie me or turn me out. I am afraid to trust myself. The reason that I told you to knock me down and drag me in here was to avert suspicion. I will say that I was dragged here, in case you decide to turn me loose."

"What do you think is the best solution?" I asked.

"Turn me out," he replied. "Here

I am only an added source of worry and danger to you. Out there, I am at worst, only another one added to your enemies, and if I can hold up, I may be able to aid you. Start at once on experiments that will enable you to reverse Doctor Murgatroyd's devilish process. It is your only chance. When you have the problem solved, signal me by hanging a red streamer out of an upper window and if possible I will come to you for experimentation. Now I will leave. Don't open the door, you don't know who is outside. Throw me out of an upper window; it won't hurt me, as you found out to-night."

We carried out his suggestion and threw him out of an upper window. As he fell, others of the plant people sprang toward him, but he leaped lightly to his feet and joined them in apparent friendliness. The group talked together for a few moments and then went off in a body. In a few minutes the flood lights died out and the ground was in darkness.

I gave Eileen a small dose of an opiate that was in the medicine cabinet and in a few moments her regular breathing assured me that she was asleep. I kept watch the rest of the night and with the aid of an electric hot plate prepared breakfast before I called her.

"Don't speak of last night," were her first words to me. "I must keep my mind away from it or I can't work. And Professor Holmburg is right. The safety of the world depends on our efforts and we must get to work at once. I'll grieve for Dad later, when I have time. Right now, I would give anything to have his genius here to direct my work. Fortunately, I have been his principal assistant since the start of his experiments and I have some idea of where to start. We'll

eat something and then get to work."

After breakfast, she started me assembling apparatus and she began the first of the long list of experiments that occupied her waking hours for the next four months. In an hour, I was making blunders and she looked at me keenly.

"Did you sleep last night?" she asked.

I admitted that I had not and she at once forced me to lie down and take a little rest. I was so tired that I yielded without protest and slept the balance of the day. It took us several days to get our routine established, but we soon did so and worked unremittingly. My previous training under her father proved its value and I was soon able to do most of the things that she required and our work went on apace, although for some time, our experiments were barren of any results that could be called at all encouraging.

We saw nothing of the plant people for the first two weeks of our imprisonment. While we were closely confined to the limits of the building, we had no particular fear of their forcing an entrance. The windows were glazed with half inch vitriolene slabs; while they admitted light with no retarding action even on the ultra-violet rays, they were impervious to assault from anything short of a disintegrating ray or high explosive in large quantities, neither of which the plant people possessed. Ventilation was taken care of through openings covered with vitriolene gratings. There was a large water tank in the building that was half full when we entered and the rains would more than serve to keep it brimming over. The question of food was a little more serious, but an inventory showed that we had enough compressed rations to last the two of

us a little more than a year and enough vitamine tablets to last for twenty years.

Our first hope was that the Subcommittee would be alarmed by the silence of our radio and would order an investigation, but as the days slid by into weeks, we realized that for some reason they were not. We had no idea of the real reason that prevented an investigation at that time. Our first intimation that something was wrong came after a month of imprisonment, when we were aroused from our work by the drone of a plane directly overhead. We soon identified it as one of the large transport planes that had formed part of our equipment and we shouted with joy at the prospect of rescue, or rather of assistance, for we had already resolved that we would not leave Kahoowale until we had rectified the tragic error that Doctor Murgatroyd had so unfortunately made. The plane soared over the laboratory and swung down to a landing in the field about half a mile away. I rushed to the door, but Eileen held me back.

"Wait, Harry," she cried. "Come up to the window and watch what happens. The normal crew of that ship is only four men and six of us would be no match for the plant people if they attacked. If the crew can win to the door, we will let them in, but if we go out to meet them, we may all be lost and our loss would mean the loss of all mankind."

Her advice was so manifestly sound that I obeyed her without question and we ascended to the upper floor to watch the landing. The plane came to a perfect stop and two of the crew alighted. They looked around in surprise and just then we saw the plant

people. In a body they approached and shook hands cordially with the crew of the plane. Through a pair of binoculars I could plainly discern that the leader of the plant people was our erstwhile friend, Professor Holmburg.

After a few moments of friendly colloquy, the plant people swarmed into the plane and assisted the crew to unload it. When the unloading was completed, the entire crowd started for the laboratory, apparently in perfect amity. As they came nearer, it was evident that the plant people were craftily crowding the crew in such a manner as to separate them from one another. They were within two hundred yards of the laboratory and we were vainly trying to signal them when the attack came. In answer to a prearranged signal, the plant people threw themselves on the doomed crew and dragged them down, almost unresisting. I cannot describe the ghoulish scene that followed, but Eileen and I were forced from the window weak with horror and sick at heart as we realized the full force of the menace that we had turned loose on an unsuspecting world. Did I say the full force? I am exaggerating, if I did. The realization of the full force came later, with unexpected horror. At that time we had only a dim realization of what we had done.

We saw nothing more of the plant people for a week. At the end of that time, we again heard the roar of a plane motor and we hastened to the window, hoping that the disappearance of the first party had roused suspicion and that war planes were being sent to investigate. A glance from the windows showed us our error. The motor that we heard was the transport plane that had landed the week before taking off. It rose rapidly in the air, circled

the landing field and straightened out on a course toward Maui.

"Where are they going?" asked Eileen.

I did not answer. An idea of the horror of the situation came dimly to me and I turned away, sick at heart. An hour passed and we heard the roar of the returning ship. Slowly and majestically it sank to a landing and to our horror, discharged a cargo of a dozen luckless humans, doomed to make a feast for the plant people.

There was nothing that we could do; nothing to save the doomed prisoners and no way to warn the world of the horror that camped on Kahoowale. We tried spreading signals on the laboratory roof in the hope that they would be seen by one of the passenger or mail planes that occasionally flew over the island, but we were soon forced to abandon these attempts. The plant people kept a close watch on our movements and removed the signals almost at once. After our second attempt, they kept one of their number on guard on our roof and we did not dare to open the vitriolene gratings lest he should make his way in and summon others to his aid. Our only hope was through the success of Eileen's experiments and we threw ourselves into them with feverish activity.

Weekly or oftener the huge transport plane took off, each time returning with a load of captives and each time the grisly feast was repeated with all of its attendant horrors. We soon learned the inadvisability of watching the landings and devoted all our waking hours to our work. Eileen's method of attack was simple enough. We had an abundance of rabbits and other animals, whose blood had been transmuted by her father before his tragic end to

experiment with, and it was on them that she labored. The blood, or more properly, sap, would be drawn from its veins and experimented with. A number of times, she succeeded in turning the green fluid into a red one, but each time when it was returned to the veins of the rabbit or guinea pig, one of two things happened. Either the rabbit died outright, or more often, it would be sick for some days and then return to its former condition of a moving plant. Apparently the plant form was hardier and more persistent than the animal form.

The strain began to tell heavily on Eileen. I warned her to guard her health as I would be helpless to carry on the work without her guidance, but she would not heed me and often after we had retired for the night, a noise would awaken me and I would find her in the laboratory bending over test tubes, trying out a new idea which had come to her in the watches of the night. Never did man or woman labor more faithfully for the salvation of the world than she did and yet it was the irony of fate that I should stumble on the solution through a mere accident.

We were repeating, with meticulous care, an experiment that had offered rather more prospects of success than had many others. The rabbit on which we had first tried this method had remained in a semi-animal state for nearly ten days before reverting to the plant state, although it never did get to the point of eating its normal vegetable diet. We had taken another especially healthy specimen and withdrawn its blood. Eileen had trans-mitted the hemaphyll into a substance that was closely related to hematin, although not identical with it. I was preparing to inject the blood mixture

into the rabbit's veins, when a piece of glass tubing broke in my hands, cutting a small artery in my palm. The blood spurted forth and a few drops of it fell into the prepared rabbit blood. As the two mingled, my great idea was born, and without saying a word to Eileen, I allowed an ounce of my blood to flow into the mixture before I staunched my bleeding.

Five days later, when we shut off the current of the suspended animation apparatus, a typical white rabbit with pink eyes and nose hopped forth and sniffed eagerly around. With trembling hands, I offered it a few grains of corn that were handy. The rabbit sniffed for a moment and then with every indication of eagerness devoured them and looked around for more. I staggered back, the tension of my feelings suddenly relieved, but I was recalled to myself by the sound of a body falling. The strain had been too much for Eileen and for the first time in her life, she had fainted.

Eileen was forced to keep to her bed for several days while I attended the rabbit and brought hourly reports to her bedside. There was no doubt that our experiments had at least been successful. The rabbit's appetite for vegetable matter increased daily and after the third day, it would turn away in disgust from the meat which it had voraciously devoured while it was a plant.

The good news did more toward Eileen's recovery than any medicine could have done and in a week she was up and around, almost her normal self. I admitted to her what I had done and she heartily approved and congratulated me prettily enough on what she called my genius, but which no one can help but ascribe to the merest accident and luck. Before his

departure, we had arranged with Professor Holmburg as to the signal we should display as soon as we had met with success, and it was with glad hearts that we hung a red streamer out of an upper window. I was rather dubious about his return, in view of the scenes we had observed him participating in, but Eileen still had high hopes.

Two days passed before we heard from him, although with our glasses, we had seen him meet the plane returning from one of its periodic trips and to our horror, participate in the grisly feast that followed. Even Eileen began to lose hope and to admit that we had probably found our solution too late to save any of the unfortunate victims of her father's genius. The evening of the second day, a knock sounded at the laboratory door.

"Who is it?" I asked through the speaking tube.

"Holmburg," answered a hoarse voice. "For God's sake hurry and let me in. The others may be here at any moment."

Cautiously I unbolted the massive door and swung it open enough to admit him, my hand trembling on the compound lever that would close it again against the weight of fifty men, were treachery meant. He slipped in as the door opened and I slammed it shut behind him and shot the massive bolts. As the lights flashed on, I recoiled in horror.

I would hardly have known him for the same man that had so suavely sat as our guest at the Doctor's bungalow four months before. He was naked and soiled and his skin had lost its animal characteristics and looked like bark. His hair and beard had grown to immense length and to my horror, it had

turned green and resembled shaggy moss.

"Bind me hand and foot instantly," he panted as he glared at me, the light of madness in his eyes. "Hurry, man, I am holding myself for a moment, but I may relapse at any instant."

Seizing a rope from the table behind me, I complied with his request and soon had him bound securely. As a further precaution, I strapped him on an operating table.

"Have you been successful?" he asked.

"Completely so," I replied, "and we are ready to restore you to your former human state at once."

"How did you find it?" he asked.

"It was a fortunate accident," I replied. "I accidentally mixed blood from my veins—"

"Blood!" he howled, the human ascendancy vanishing like a flash. "Human blood! It will do anything. It keeps us strong and mobile! Blood! Ahhh—"

His voice trailed off into a meaningless gibber and Eileen and I looked at him in horror.

"Let us operate at once," she exclaimed. "There is no time to lose to remedy the terrible effects that the change has had on him."

I agreed with her and hastened to bring out the apparatus which we had used to draw the blood from his veins months before. The question arose as to which of us should contribute blood toward his salvation and how much should be contributed. Each of us was eager for the honor, but Eileen was not strong and she finally admitted the force of my argument and agreed to limit her contribution to a pint, while I was to draw four pints from my veins. Such a loss would have been fatal a century and a half

before, but since the perfection of synthetic blood, it has been possible to draw even a larger amount than this from a normal healthy man, replacing it with synthetic blood with no apparent ill effects other than a slight nausea and semi-arrested metabolism for a few days.

Despite the struggles and howlings of the Professor, we bound him more firmly to the table and attached the pump and drew the horrible green sap from his veins. Eileen took it back to the laboratory to work on and returned in twenty minutes with the vessel containing a bright red fluid. I ascended another table and she drew four pints of blood from my veins and mixed it with the fluid she had prepared and then pumped synthetic blood into my veins to restore the normal vein content. I did the same for her, mixing her blood with mine and the fluid prepared from the sap we had taken from Professor Holmburg. We attached the pump and slowly forced the mixture into his circulatory system, withdrawing the synthetic mixture which we had first introduced. As the vessel emptied and the red fluid began to flow from his body, we stopped the pump and reconnected the severed vein and Eileen threw the switch that put him in a state of suspended animation.

The five days of waiting passed slowly enough but all the signs were encouraging and it was with some measure of confidence that we turned off the current and restored him to consciousness. He looked around him in a dazed manner. Recollection suddenly came to him and he struggled to rise, looking about eagerly. I unbound some of the straps that held him and Eileen handed him a mirror. We had shaved him and cut his hair while he was unconscious and during

the five days, the green cast had faded entirely from his face and his skin had lost that peculiar bark-like appearance that had characterized it. Long and eagerly he gazed into the mirror and then fell back with a sigh.

"Successful," he muttered. "I will die a human being.

"Die?" I exclaimed, "Nonsense! You will help us to restore the rest of those unfortunates."

"Hand me a stethoscope," was his reply.

I handed him one and he adjusted it and listened critically to his heart. He handed me the instrument and motioned me to do likewise. I listened and drew back in dismay. His heart was pounding and grinding like a rusty engine.

"You can see what I meant," he said with a ghost of a smile. "I had a pronounced cardiac weakness before the experiment started and I was sure without listening that my heart would never stand the strain that has been put on it. My friends, your work is just starting, for you will find that none of the others will submit to an operation and you are not in sufficient force to capture one of them. They are now over a thousand strong and in another month, they will number tens of thousands, and be ready to attempt the conquest of the world that they plan."

"Tens of thousands?" I exclaimed in amazement. "How is that possible?"

"Seeds," he replied simply. "About two months ago, we found that the normal animal rate of increase had stopped and that the females were producing hundreds of seeds monthly. These seeds take only about two weeks to germinate and once sprouted, they grow to maturity and mobility with amazing rapidity. Some of the newly

sprouted females show evidence of reaching the seed bearing stage in three or four months, and when the second generation starts to produce, no power on earth can stop them. You must work with great rapidity."

"What can we do?" I asked in horror at the revelations he had made. "There is no way to escape and warn the world. We had hoped that our radio silence would cause an investigation, but it has not done so."

"There has been no radio silence," he replied. "They have your sending set and are sending daily messages to the Sub-committee reporting progress. They called the plane that landed. The world believes that complete success has crowned your experiments and plans are being made to dispatch members of the Inter-racial Committee to be your first subjects. Even were the world warned, what could they do? Human weapons seem helpless."

"If sufficient force were mobilized, it seems that something might be done," I said.

"Bullets have no appreciable effect on them as you have seen. If one of the plant people were dismembered, each segment would grow into a complete plant in a few weeks with all the characteristics of the original. Fire may destroy them and a disintegrating ray might solve the problem, but it would need a world-wide holocaust to make fire successful. There are millions of seeds in existence now. The ray is slow and hard to work and all the ray machines in the world would not keep up with the rate of increase."

"Then the world is doomed?" broke in Eileen.

"I hope not," he replied. "I have an idea that may save it, if my life is spared for another week. Doctor Wilbur, will you attach a revigatorator

to me with a switch in such a position that I may snap it on at a moment's notice? Also put an ozone tank close at hand for use if needed. I will lie on this table and direct your work. I could work faster, could I do it personally, but I do not dare to risk the exertion and you must be my hands."

We hastened to comply with his instructions and then asked what we were to do. He thought for a moment and then spoke slowly, choosing his words with great care.

"Do you remember Mitshumi's disease that threatened to rid the world of certain species of plants some sixteen years ago?"

We remembered the time and it flashed across both of us that it had been Professor Holmburg who had developed the anti-blight which destroyed the malignant fungus growth that had so alarmed mankind. He smiled as I mentioned the fact and went on.

"There are specimens of Mitshumi's fungus bottled in this laboratory," he went on. "Get the bottle and bring it here."

A short search revealed the sought for article and we displayed it to him.

"Good," he said. "Innoculate one of your plant rabbits with the fungus and turn him loose with the others. It probably will have no effect, but it is possible that it will have. When you have done that, take another portion and float it on a saline solution of basic nitrated protein in order to increase our supply. We must develop from this sample, a fungus which will attack the plant people and do it with great rapidity. Mitshumi's fungus, as you know, works very slowly."

It is useless for me to try to describe in detail the experiments that

followed. I am not a biological chemist and I did my share of the work almost blindly. Even Eileen's highly trained mind was not a match for the brilliant scintillating genius of Professor Holmburg when working in his chosen field. Only ten days elapsed before Eileen perfected the very fungus that he had been trying to develop.

Meanwhile, it was very evident that the plant people were increasing in numbers at an alarming rate. The whole island seemed to be swarming with these new monsters and at times they swarmed around the laboratory in droves, attracted by the smell of animal flesh and ineffectually attacked the walls and doors of the building and battered at the vitriolene windows and gratings.

"What are their plans?" I asked the Professor.

"When they number one hundred thousand, they will be ready to strike," he replied. "They will radio in your name for a large number of transport planes and will capture them on arrival. With these planes they plan to invade the other islands of this group. Once they have a foothold, nothing will dislodge them. When they have all the islands under their control, they will invade Asia and the Americas simultaneously. Prolific as they are, nothing can stop them. We must end them before they leave here."

The tests that we made on the plant rabbits were highly successful. The inoculated rabbits drooped and withered in a few hours and the disease proved to be highly contagious. The only problem left was that of starting the disease outside of the laboratory walls. The idea of broadcasting the spores from the laboratory windows was attractive, but a failure. To be effective, the fungus from the culture

had to be injected directly into the plant creature that it was desired to infect. Our next idea, of turning loose a few infected rabbits was also a failure. An infected rabbit would infect another like animal, but would not infect a plant dog or cat or vice versa. Evidently, we would have to capture a plant man or woman and infect him or her.

I offered to sally forth and try to affect a capture, but neither Eileen nor the Professor would hear of it.

We spent many an anxious hour in earnest consultation, attempting to find a solution, but it was the immense humanity and the dauntless courage of the Professor which finally suggested the course we pursued.

"I am about to die," he said, "I have no hope of living more than a few weeks at the outside, and by my death, I can save mankind. The only course of procedure that offers a chance of success is to change me into a plant again, infect me, and turn me loose among them."

In vain we protested the sacrifice, and I offered, albeit reluctantly, to submit my body to the change. The Professor was adamant in his attitude and the dynamic personality which had produced the fungus, was successful in determining that he should be the first on whom it should be used. We bade him a sad farewell, and coupled the pump to his veins. The experiment was entirely successful and five days later, we threw a newly transformed plant man infected with the virile progeny of Mitshumi's fungus, from the laboratory window.

Hardly had we done so than our attention was attracted by the roar of approaching motors and a fleet of thirty huge transport planes winged

their way toward the landing field to their doom.

"We were just in time," I remarked and turned to Eileen. For the second time in her life, she had fainted.

The rest of the story is common knowledge. Our attempt to infect the race of plant men was successful and in every one of the planes that left the next day, there was at least one member of the crew that carried the deadly infection. They made the landings they had planned, but within forty-eight hours, the invaders had all withered and died. The disease ran its course a little more slowly on Kahoowale itself, but in a week, the ground was dotted with the dead, withered bodies of plant people and the air was rank with the smell of decaying vegetation.

We allowed another week to pass before we left our prison and ventured forth, to find the beautiful island totally devoid of animal life. The voracious plant people had killed them all. We soon located the sending set and sent forth the message that brought a fleet of three hundred military planes from the base at Pearl Harbor to rescue us.

The plant people had passed as a menace to mankind, but we found a few of the seeds sprouting while we

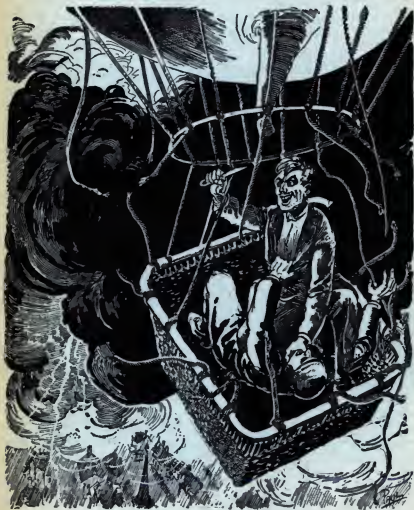
were waiting for our rescuers and for years afterwards, an occasional specimen of the race was met with here and there, evidently from a seed that had floated for years and landed on a distant shore. The seeds would not germinate in salt water, but would do so rapidly when they reached land. We had specimens of the fatal fungus, however, and as soon as one of the plants was reported, a swift plane would be dispatched from the nearest depot with the virus needed to bring its career to a sudden close.

But one word more and I am through. Those of you who have taken the passenger lines to the gardens of Lanai have passed over Kahoowale and have seen the huge Holmburg botanical laboratory which marks the site of Doctor Murgatroyd's experiment. The next time that you go there, go to the laboratory itself and let the Director lead you to the center of the grounds. There you will find a marble slab set into the ground, marking the spot where Professor Holmburg's body was found by our rescuers. It was buried where it lay and on the slab is chiseled an inscription written by Eileen Wilbur. It reads very simply: "Friedrich Wilhelm Holmburg. The Saviour of Mankind."

The End

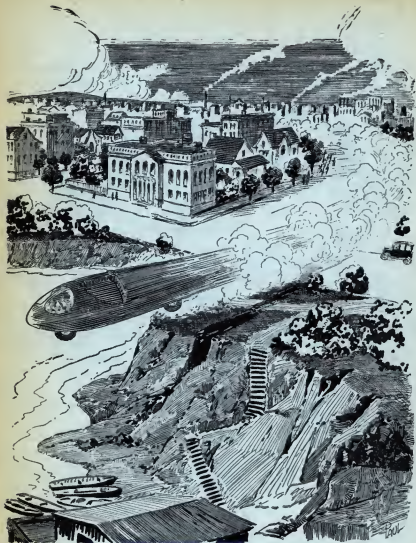
A PORTFOLIO:

Frank R. Paul Illustrating Jules Verne





Robur the Conqueror (Amazing-1927)



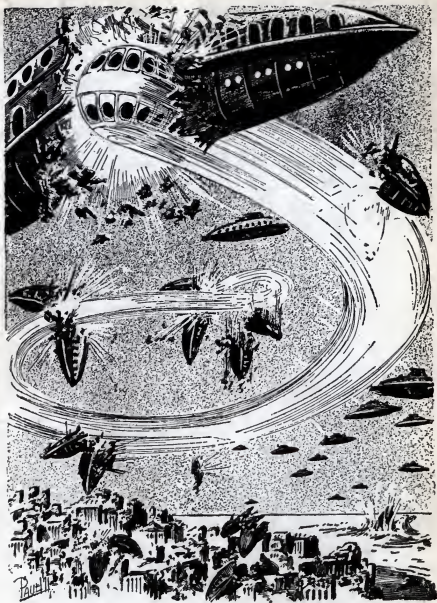
The Master of the World (Amazing-1928)



The English at the North Pole (Amazing-1929)



THE SKYLARK OF SPACE Illustrated by FRANK R. PAUL (Amazing-1928)



THE SKYLARK OF SPACE Illustrated by FRANK R. PAUL (Amazing-1928)